



The ***Communicator***

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50 years of expertise bridging RF passion with essential public safety response

The Bi-monthly Journal of Surrey Amateur Radio Communications



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Issues appear bi-monthly, on odd-numbered months, for area Amateur Radio operators and beyond, to enhance the exchange of information and to promote amateur radio activity.

Submissions of articles and photos are welcome.

During non-publication months we encourage you to visit the Digital Communicator at ve7sar.blogspot.ca, which includes recent news, past issues of The Communicator, our history, photos, videos and other information.

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QSK?

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...from the Editor's Shack



Welcome to (almost) spring and to a packed issue... As always, there is something for all levels of the Amateur Radio Service.

As you flip through these pages, you will find a curated collection of articles that celebrate the vast spectrum of amateur radio—from the towering historical giants of the industry to the cutting-edge DIY innovations happening on the workbench today.

We explore the enduring legacy of Werner von Siemens, whose 19th-century electrical empire laid the groundwork for modern telecommunications. In a more gripping historical account, we revisit the Alexanderson kidnapping, a dark chapter in General Electric's history. History is also personal, as seen in a nostalgic "Rocket Radio" tale of evolution and a feature on a "Barn Find" radio—reminders that for many of us, this hobby started with a single piece of scavenged gear and a spark of curiosity. We also pay a poignant tribute to the Titanic's heroes of the airwaves through the upcoming EG1912T special event station, honouring those who proved radio's vital role in maritime safety.

For the builders and "makers," this issue is packed with practical inspiration. We showcase the KD5ZZU Z-match tuner, a masterclass in elegant construction, and provide a deep dive into the hidden "superpowers" of the Icom IC-7300. If you have access to a 3D printer, you won't want to miss our features on a useful Powerpole case and an ingenious method for creating homebrew PCBs using copper tape.

Our DXing and field reports take you from the frozen shores of Peter I Island—where a lying compass was no match for the ionosphere—to the high-altitude thrills of the North Fraser Club Balloon Project. Whether it's activating LZ9X in Bulgaria or the whimsical (and perhaps cautionary) tale of "Charlie and the Field Day Chicken," these stories capture the grit and humor required to operate in the wild.

Amateur radio is far from static. From Digital Television in ARES kits to high-altitude 925 MHz experiments and the intersection of Arduino with Semaphore signalling, we are constantly finding new ways to bridge old traditions with new tech. We close this issue with a dose of Rational Optimism, reminding us that while technology evolves, the spirit of community and discovery remains as strong as ever.

Enjoy, and please keep the comments and suggestions coming — communicator@ve7sar.net.

~ John VE7TI, Editor

Surrey Amateur Radio Communications

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Do you have a photo or bit of Ham news to share? An Interesting story or link?

Something you are looking for?

eMail it to communicator@ve7sar.net for inclusion in this publication.



This Month's Cover...

Return to a quiet sun? The Sun hasn't had any visible sunspots for the first time since 2022, giving scientists a fresh hint that Solar Cycle 25 may be moving into a quieter phase.

On February 22, 2026, observers recorded a sunspot number of zero, meaning no visible dark spots on the Earth-facing side of the sun. It was the first confirmed spotless day since June 8, 2022, ending a run of about 1,355 days in a row with at least one sunspot on the solar disk. See the story on [page 110](#).

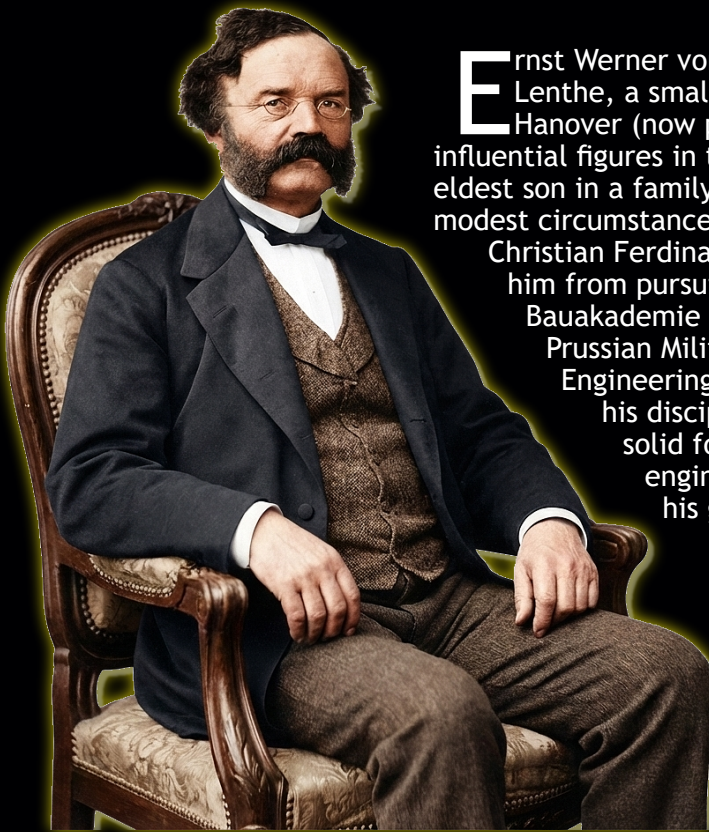
*"Turn your face to the sun and the shadows fall behind you."
— Charlotte Whitton*



The Rest of the Story...

Werner von Siemens

He built an electrical empire that still exists today

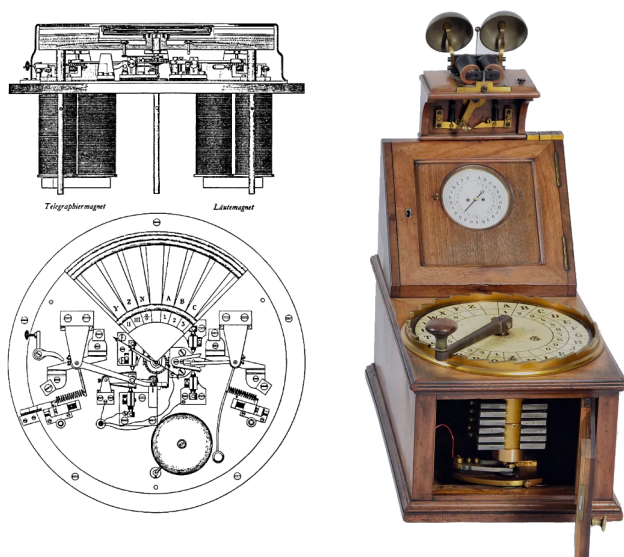


Ernst Werner von Siemens, born on December 13, 1816, in Lenthe, a small village near Hannover in the Kingdom of Hanover (now part of Germany), emerged as one of the most influential figures in the history of electrical engineering. As the eldest son in a family of fourteen children, Siemens grew up in modest circumstances on a tenant farm managed by his father, Christian Ferdinand Siemens. Financial constraints prevented him from pursuing formal higher education at the Bauakademie in Berlin, leading him instead to join the Prussian Military Academy's School of Artillery and Engineering in 1835. This military training not only shaped his disciplined approach but also provided him with a solid foundation in mathematics, physics, and engineering—skills that would prove instrumental in his groundbreaking work.

Siemens' early career was marked by innovative applications of electricity in military contexts. During his service in the Prussian army, he developed electrically detonated sea mines, which were successfully deployed during the First Schleswig War in 1848 to counter a Danish blockade of Kiel.

Werner von Siemens
1816-1892

This invention demonstrated his early grasp of electrical principles and their practical uses. However, it was his encounter with Sir Charles Wheatstone's electric telegraph in 1837 that ignited his passion for telecommunications. Recognizing the device's potential for long-distance communication, Siemens set out to improve upon it. In 1846, he invented an enhanced pointer telegraph that used a needle to point to letters on a dial, eliminating the need for operators to learn Morse code. This device was far more reliable and user-friendly than existing models, laying the groundwork for modern electrical communication systems.



The pointer telegraph's success prompted Siemens to resign from the military in 1849 and venture into entrepreneurship. On October 1, 1847, he co-founded Telegraphen-Bauanstalt von Siemens & Halske with mechanic Johann Georg Halske in Berlin. The company initially focused on manufacturing and installing telegraph lines. One of Siemens' key innovations during this period was the use of gutta-percha—a natural latex derivative—as an insulating material for telegraph cables in 1847. This breakthrough allowed for the reliable laying of underground and submarine cables, protecting them from moisture and environmental damage. It revolutionized telegraphy by enabling the first transcontinental and transoceanic lines, such as those across the Mediterranean and from Europe to India. Without this insulation technique, the expansion of global communication networks would have been severely hampered.

Under Siemens' leadership, the firm expanded rapidly, establishing subsidiaries in London, St. Petersburg, Vienna, and Paris, managed by his brothers Carl and William. By the 1850s, Siemens & Halske was undertaking massive projects, including the construction of the Indo-European telegraph line in 1868, which connected London to Calcutta over 11,000 kilometers. This megaproject exemplified Siemens' vision of technology as a tool for solving real-world problems and fostering international connectivity. His motto, "I want to!" reflected his relentless drive to harness electricity for societal advancement.

Today, the availability of electricity is taken for granted. At first, however, generating and distributing electricity was anything but easy. The first commutated dynamo was built in 1832 by Hippolyte Pixii, a French instrument maker. It used a permanent magnet which was rotated by a crank. The spinning magnet was positioned so that its north and south poles passed by a piece of iron wrapped with insulated wire.

Pixii found that the spinning magnet produced a pulse of current in the wire each time a pole passed the coil. However, the north and south poles of the magnet induced currents in opposite directions. To convert the alternating current to DC, Pixii invented a commutator, a split metal cylinder on the shaft, with two springy metal contacts that pressed against it.

This early design had a problem: the electric current it produced consisted of a series of "spikes" or pulses of current separated by none at all, resulting in a low average power output. As with electric motors of the period, the designers did not fully realize the seriously detrimental effects of large air gaps in the magnetic circuit.

Antonio Pacinotti, an Italian physics professor, solved this problem around 1860 by replacing the spinning two-pole axial coil with a multi-pole toroidal one, which he created by wrapping an iron ring with a continuous winding, connected to the commutator at many equally spaced points around the ring; the commutator being divided into many segments. This meant that some part of the coil was continually passing by the magnets, smoothing out the current.

The Woolrich Electrical Generator of 1844, is the earliest electrical generator used in an industrial process. It was used by the firm of Elkingtons for commercial electroplating.

Self excitation

In 1827, independently of Faraday, Hungarian inventor Ányos Jedlik started experimenting with electromagnetic rotating devices which he called electromagnetic self-rotors. In the prototype of the single-pole electric starter, both the stationary and the revolving parts were electromagnetic.

Around 1856, six years before Siemens and Wheatstone, Jedlik formulated the concept of the dynamo, but did not patent it as he thought he was not the first to realize the idea. Instead of permanent magnets, his dynamo used two electromagnets placed opposite to each other in order to induce a magnetic field around the rotor. This was also the discovery of the principle of dynamo self-excitation, which replaced permanent magnet designs.

Practical designs

Early generators and batteries provided far too little electrical power and could not be used on a large scale. Werner von Siemens changed that. With an ingenious invention that made the electrical revolution possible.

The dynamo was the first electrical generator capable of delivering power for industry. The modern dynamo, fit for use in industrial applications, was invented by Henry Wilde with his paper presented to The Royal Society by Michael Faraday on 26th March 1866. It was independently invented by Werner von Siemens, Charles Wheatstone, and Samuel Alfred Varley. Varley took out a patent on 24 December 1866, while Siemens and Wheatstone both announced their discoveries on 17 January 1867, by delivering papers at the Royal Society.

We all still benefit from it today. It became Siemens' most profound contribution to electronics in 1866, when he discovered the dynamo-electric principle and developed the first self-excited dynamo. Prior to this, electrical generation relied on inefficient batteries or permanent magnets. Siemens' dynamo used residual magnetism in an electromagnet to generate continuous electrical

The Werner von Siemens Ring

The Werner von Siemens Ring is one of the highest awards for technical sciences in Germany.

It has been awarded from 1916 to 1941 and since 1952 about every three years by the foundation Stiftung Werner-von-Siemens-Ring. The foundation was established on 13

December 1916 on the occasion of the 100th anniversary of the birth of Werner von Siemens. It is located in Berlin and is traditionally managed by the Deutscher Verband Technisch-Wissenschaftlicher Vereine (DVT) (English: German Federation of Technical and Scientific Associations). Before 1960, the name of the award had been simply Siemens Ring (German Siemens-Ring or Siemensring).

The award is presented as a golden ring with emeralds and rubies depicting the leaves and fruit of laurel, placed in an individually crafted cassette carrying the portrait of Werner von Siemens and the dedication to the recipient.

According to the statutes, patron of the foundation council is the President of Germany, and the President of the Physikalisch-Technische Bundesanstalt is the foundation council's executive chairman. The council votes on the recipients. Members of the council are the bearers of the ring and representatives of the member scientific and technical societies.



current from mechanical energy, making large-scale power production feasible. This invention marked the dawn of the electrical age, enabling the widespread use of electricity for lighting, machinery, and communication. It was a cornerstone for the development of modern electronics, as it provided a reliable power

source for devices that would later include radios and other electronic equipment.

Building on the dynamo, Siemens pioneered several applications in electric transportation, which indirectly advanced electronic control systems. In 1879, he demonstrated the world's first electric locomotive at the Berlin Trade Fair, pulling passengers on a 300-meter track. This was followed by the launch of the first electric passenger train in the same year. In 1880, he installed the first electric elevator in Mannheim, Germany. The Gross-Lichterfelde Tramway, opened in May 1881, became the world's first electric tram line, spanning 2.5 kilometers in Berlin. Perhaps most innovative was the "Electromote" in 1882—the first trolleybus, which ran on overhead wires and foreshadowed modern urban electric transit. These inventions not only transformed transportation but also required advancements in electrical wiring, switches, and motors, contributing to the field of electronics by refining components like conductors and insulators.

While Siemens' direct involvement in radio technology was limited—given that radio waves were experimentally verified by Heinrich Hertz in 1887, just five years before Siemens' death—his work laid essential foundations for it. Telegraphy, which Siemens advanced through reliable wired systems, was the precursor to wireless telegraphy, the early form of radio. His insulation techniques and dynamo enabled the power infrastructure needed for radio transmitters and receivers. Moreover, in 1877, Siemens patented an electromechanical moving-coil transducer (German patent No. 2355), which operated on principles similar to those later used in loudspeakers. This device converted electrical signals into mechanical vibrations, a critical component in radio receivers for audio output. Although adapted posthumously, it underscores how Siemens' innovations in transducers and amplifiers influenced the electronics underpinning radio broadcasting.

Siemens' company continued to build on his legacy, venturing into radio production in the early 20th century. For instance, by the 1920s and 1930s, Siemens & Halske developed radios like the "Volksempfänger" (people's receiver) and high-quality music cabinets, expanding into wireless communication. Ernst von Siemens, his grandson, oversaw the radios and small devices department, emphasizing technology, design, and market

expansion. This evolution from wired telegraphy to wireless radio highlights how Werner von Siemens' foundational work in electrical engineering facilitated the telecommunications revolution.

Beyond inventions, Siemens was a visionary advocate for science and social progress. He established the Physikalisch-Technische Reichsanstalt in 1887, a national institute for metrology and standards that advanced electrical research. He viewed technology as a means to improve quality of life, promoting sustainability and resource management long before these became global priorities. His writings emphasized that science fosters humility and idealism, countering materialism. In recognition of his contributions, he was ennobled as "von Siemens" in 1888 and awarded the Pour le Mérite for Sciences and Arts in 1886. The SI unit of electrical conductance, the siemens (S), honors his name, symbolizing his enduring impact on electronics.

Siemens retired from active management in 1890, passing the reins to family members who sustained the company's growth. He died on December 6, 1892, in Charlottenburg, Berlin, leaving behind a conglomerate that would become Siemens AG, a global leader in electronics and electrical engineering. Today, Siemens employs hundreds of thousands and generates billions in revenue, with innovations spanning from power grids to medical imaging—all rooted in Werner von Siemens' pioneering spirit. In electronics, Siemens' dynamo and insulation methods enabled the miniaturization and reliability of circuits, paving the way for semiconductors and integrated systems.

For radio, while not a direct inventor, his telegraphy advancements and power generation technologies were indispensable precursors. Without his contributions, the rapid development of radio in the early 20th century—facilitating global broadcasting, navigation, and entertainment—might have been delayed. Siemens' life exemplifies how individual ingenuity can electrify the world, transforming abstract principles into tangible progress that continues to resonate in our digital age.

And that was his story. ~

Father Begs Aid Of Radio Fans to Find Stolen Lad

Inventor Broadcasts Personal Appeal for Help
in Search for His Kidnaped Six-Year-Old Son

Trials and Errors

General Electric and the Alexanderson Kidnapping

by Dave Jensen W7DGJ

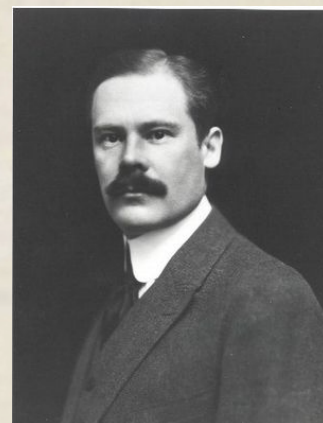


Dave Jensen, W7DGJ, was first licensed in 1966. Originally WN7VDY (and later WA7VDY), Dave operated on 40 and 80 meter CW with a shack that consisted primarily of Heathkit equipment. He has published articles in magazines dealing with science and engineering.

It was a cool, Spring morning on April 30, 1923, when three youngsters were outside their Schenectady home playing in the yard. They were the children of an immigrant Swedish family, the Alexandersons, who had moved to the USA so that their father could work for the General Electric company. A quarter of a century before, Thomas Edison had joined forces with financier JP Morgan to merge his company and others into the General Electric Company. Their father, Ernst Alexanderson, was a key part of GE's R&D team doing communications research and had become a well-placed executive scientist.

Perhaps it was because of the publicity generated by his inventions that the Alexanderson residence had become the target of criminals. He may have been perceived as someone who, like Edison, had greatly profited from the "miracle" technologies coming out of the GE Schenectady labs. Of course, this wasn't true, as corporate inventors of that time would see the resulting revenues go to their employer. Despite this, the nice home in Schenectady's General Electric Realty Plot must have looked like a good target.

The oldest Alexanderson daughter, Edith (11) told police later that she and her sister Gertrude (7) were playing with their brother, Verner (6), when a man



approached them saying that he had too many pet rabbits... he told the children that he would be happy to give them a few bunnies and sent the two girls back to get a box.

As the girls left, young Verner was led away. The story of this kidnapping became front page news all over the world, a harbinger of what happened a decade later to Charles Lindbergh and his wife.

Except, this story had a twist when radio became a key element of the solution! The first Amber Alert! (Thanks N1YR)

General Electric's Communication R&D Team Strikes Again

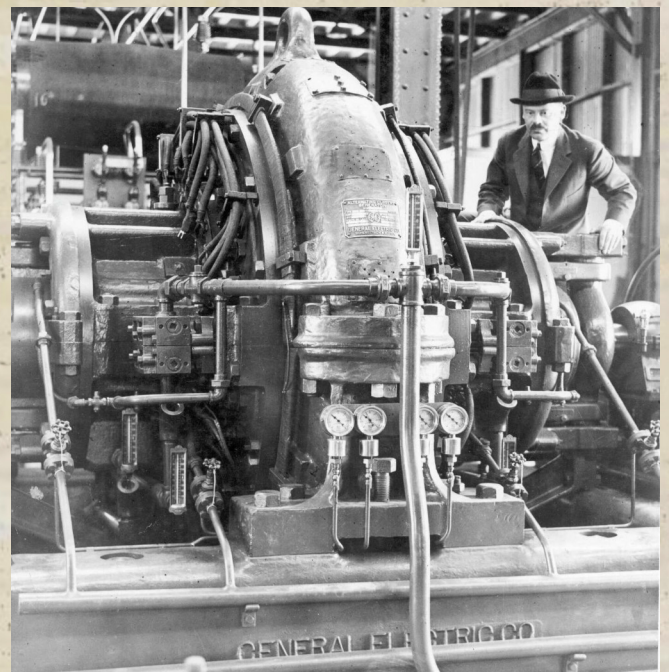
I've mentioned in previous columns how I was raised by a General Electric historian. My dad was the keeper of all things Thomas Edison, as presented by GE's publicity department (which tried their best to keep Edison's memory alive with the public). As a result of this indoctrination, I became fascinated with the exploits of the company's innovation team as there have been a number of radio heroes who came out of the early days of the company. One of my favorites is Ernst F.W. Alexanderson. Perhaps it is because my family has roots in Scandinavia as well, but I find his story to be one that typifies the creative spirit and out-of-the-box thinking inherent in our radio history. His inventions were all over the map, from radio and antenna design to electric railroad engines and facsimiles.

Ernst Alexanderson was just 22 years old when he made an important decision. He studied at both Lund University (where his father taught) and also at the Royal Institute of Technology in Stockholm. He was the kind of young scientist who would spend hours at night reading the latest scientific reports. One of them was a paper published by Dr. Charles Steinmetz (GE's chief engineer) on "Alternating Current Phenomena." This changed Ernst's life, and it was in 1900 that he determined to go to the United States to seek work with Steinmetz. After a short stint with another firm, in 1902 that dream to work for GE came true. And he remained there producing new, patentable work for 46 years with well over 300 US patents (the last one coming when he was in his 90's). This guy was an innovation machine all by himself.

For our area of interest, his accomplishment was to take radio out of the "local" mode and move it to serious long-distance communications capability with the invention of a device that was the predecessor of vacuum tubes. In 1904, Alexanderson and a small team were asked by Steinmetz to build a high-output machine that would produce a unique, "undamped" continuous-wave transmission.

Alexanderson constructed a two-kilowatt, 100,000-cycle machine after two years of experimentation. It was installed in Reginald Fessenden's station at Brant Rock, Massachusetts, and it was there that on Christmas Eve, 1906, the station transmitted an historic radio broadcast which included both a voice and a violin solo. (See my last column on [Fessenden](#)).

As the years went by, the "Alexanderson Alternator" was seen as the way to transmit signals that were strong enough to be heard around the world. The patents stacked up as Alexanderson and his team developed the technology further, and in 1920 the Royal Telegraph Agency of Sweden sent out an RFP requesting proposals for a state-of-the-art "high powered radiotelegraphy station" to be located in Grimeton, Sweden. This was an ideal coastal location for such a station. The competition included Telefunken (Berlin), RCA (New York), The Marconi Company (London), and the Société Française Radio-Électrique (Paris).



The transmitter chosen for this high powered station was a monstrous 200 KW version of RCA's Alexanderson alternator (photo). General Electric had spun out RCA a few years earlier as a subsidiary, and it helped their bid that the Swedish-born designer Alexanderson was a part of the company. However, it was also critical that there were many other stations using this equipment so there would be few compatibility problems.

To clarify, these transmitters consisted of huge, rotating AC generators (the alternator) which were spun by electric motors at a fast enough speed to generate RF. That RF would then be applied to an antenna, and several versions of compatible antennas were also designed and patented by Alexanderson in his role as Chief Engineer of RCA. Alexanderson's alternator was one of the first transmitters to generate undamped continuous waves, which could communicate at a far longer range than the damped waves used by the spark gap transmitters in use a few years earlier. (I believe the fundamental difference lies in how the signal's strength changes over the duration of the transmission: constant and steady for undamped radio waves, and fading for damped waves. Please correct me in the forum discussion if this is not stated correctly).

Can Radio Save Young Verner?

Just one year before the Alexanderson kidnapping, General Electric and its RCA subsidiary built Schenectady's WGY radio station, one of the first commercial stations in the United States. Ernst Alexanderson was responsible for the design and build of this station, one of the most powerful and important of the early stations. And when it came time to spread the word about the kidnapping of his son, Verner, Ernst and his wife devised a plan to use WGY to "get the word out."

The Alexanderson family blasted the news out repeatedly on WGY. They offered the fascinated public both descriptions of his son as well as descriptions of the two men who had been seen putting Verner into a car and driving away. Rewards moved up with contributions from multiple sources, from \$1000 to \$5000 (a lot of money at the time). After the first day of regular broadcasts about the kidnapping, a woman



telephoned the police that she had heard over her radio set that they were seeking a boy and that she had seen him with the stranger in the city streets about 3:15, an hour after he had left his home. She refused to divulge her name or address and hung up her receiver when the police sought to question her. However, it gave hope to the Alexandersons and the police that the radio could be an excellent tool to let the public assist in a major crime.

The two men responsible had taken Verner to a distant cabin in the woods, and hired a relative to care for him. When they heard the news that everyone in New York and Canada knew their descriptions, they began to worry. A man from Ogdensburg heard the radio reports and told police that he had rented a car to those two men. Stanley Crandall and Harry Fairbanks, scared now that everyone in the area knew of the crime, left Verner and got into a rowboat to travel 22 miles across the St. Lawrence river and into Canada. It was years before they were apprehended but the police were eventually successful.

Young Verner, left alone in the cabin with a dog, was discovered by another radio listener, who came by as a handyman to fix a window and clearly identified the lad. He was home three days later, safe and sound. It was a first for radio -- those broadcasts had saved the day. And it was a kidnapping with a happy ending. In those days, that was rare.

In Conclusion

Ernst's story goes beyond his radio exploits. As mentioned above, his developments included inventions that are far from that scope. While Philo Farnsworth is credited with the invention of the system used in modern television, I find it interesting that it was in Alexanderson's home in Schenectady a number of years earlier (1928) when images were sent over the air on a crude, 24-line video signal and seen on a 3-inch screen. Synchronized audio came over WGY.

~ Dave W7DGJ

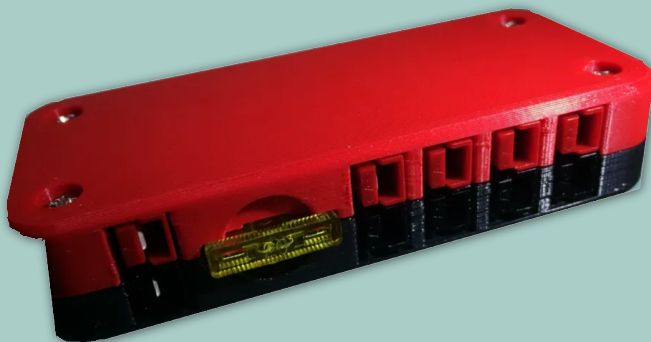


[Dave Jensen, W7DGJ](#), was first licensed in 1966. Originally WN7VDY (and later WA7VDY), Dave operated on 40 and 80 meter CW with a shack that consisted primarily of Heathkit equipment. Dave loved radio so much he went off to college to study broadcasting and came out with a BS in Communications from Ohio University (Athens, OH). He worked his way through a number of audio electronics companies after graduation, including the professional microphone business for Audio-Technica. He was later licensed as W7DGJ out of Scottsdale, Arizona, where he ran an executive recruitment practice (CareerTrax Inc.) for several decades. Jensen has published articles in magazines dealing with science and engineering. His column "Tooling Up" ran for 20 years in the website of the leading science journal, SCIENCE, and his column called "Managing Your Career" continues to be a popular read each month for the Pharmaceutical and Household Products industries in two journals published by Rodman Publishing.

The nicest Powerpole 3D printed case I've seen

This case is nice and flat, has a built-in fuse holder and gives you 4 additional ports.

The details are at <https://makerworld.com/en/models/419136-fused-anderson-power-pole-box?from=search#profileId-321749>



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News You Can't Lose

Homebrew PCBs with a 3D Printer and Copper Tape

as SPOTTED IN HACKADAY



For amateur radio operators who enjoy building and experimenting, producing custom circuit boards has often meant either sending even simple designs out for fabrication or wrestling with perfboard and point-to-point wiring. A recent demonstration by QWZ Labs presents an intriguing middle ground: a method for creating simple custom PCBs using a standard 3D printer and copper tape.

The process starts with a conventional PCB layout created in an EDA package such as KiCad. Instead of exporting Gerber files for manufacture, the layout is converted into a 3D model. This model is then imported into a CAD program, where the copper traces are extruded upward by about 0.6 mm. Once sliced and printed, the result is a plastic board with raised trace paths that correspond to the circuit layout.



Copper tape is applied over the surface of the printed board, and the raised traces act as physical guides for cutting the tape with a hobby knife or similar tool.

After removing the excess copper, the remaining tape forms the circuit traces. Component holes can be added, and through-hole parts may be soldered directly to the copper.



As with most homebrew techniques, there are compromises. The method is best suited to single-sided boards, and layouts benefit from wide traces—around 2 mm—with generous spacing. Slicer settings are important to ensure that traces and holes print cleanly. Desoldering can also be challenging, especially when heat-sensitive materials like PLA are used for the board itself.

~ Hackaday

The original article may be found at <https://hackaday.com/2026/01/28/using-3d-printing-and-copper-tape-to-make-pcbs/>

Page13—News You Can Lose



The Lighter Side of Amateur Radio

The Legend of the Wouff Hong:

Amateur Radio's Most Sacred Symbol of Discipline



In the world of amateur radio, where signals bounce off the ionosphere and technical prowess is the currency of the realm, there exists a curious artifact. It isn't a high-gain Yagi antenna, nor is it a cutting-edge software-defined radio. It is a crude, somewhat menacing-looking contraption made of wood and wire. To the uninitiated, it looks like a piece of farm equipment gone wrong. To the seasoned "ham," it is the Wouff Hong—the legendary instrument of discipline that has haunted "rotten operators" for over a century.

The Wouff Hong is amateur radio's most enduring piece of folklore. It is an imaginary tool born of satire, elevated by tradition, and preserved as a humorous reminder that with great transmitting power comes great responsibility.

The Genesis of "The Old Man"

The story of the Wouff Hong begins in 1917, during the chaotic early days of wireless communication. The airwaves were a "Wild West" of uncoordinated sparks and interference. Into this fray stepped a writer known only as The Old Man (T.O.M.), who penned a series of biting, satirical articles for QST magazine, the official journal of the American Radio Relay League (ARRL).

T.O.M. spent much of his time grumbling about "rotten operating"—the intentional interference, the long-winded "lid" (poor operator) who wouldn't stop transmitting, and the general lack of etiquette on the bands. In a 1917 article

titled "Rotten QRM," he first mentioned the Wouff Hong as a mysterious, terrifying device used to punish those who made life difficult for others on the air.

It wasn't until 1919, after the radio silence of World War I was lifted, that the Wouff Hong took physical form. A specimen was anonymously mailed to the ARRL headquarters. It was eventually revealed that "The Old Man" was none other than Hiram Percy Maxim (W1AW), the co-founder of the ARRL and a titan of early radio. Maxim had created the Wouff Hong as a physical manifestation of his satirical crusade for better operating standards.

What is a Wouff Hong, Anyway?

Physically, a Wouff Hong is an intentionally bizarre object. It typically consists of:

Two distinct pieces of wood.

A peculiar, asymmetrical shape that suggests a tool of torture or a primitive weapon.

Binding made of wire or leather thongs.

It looks like something that could be used to beat a faulty vacuum tube into submission or, perhaps, to "tune up" an operator who refuses to listen before they transmit. While its physical form is tangible (the original still resides at ARRL headquarters in Newington, Connecticut), its primary existence is symbolic. It represents the collective conscience of the amateur radio community.

The Sacred Rituals: The Wouff Hong Ceremony

The Wouff Hong transitioned from a magazine joke to a cultural institution through the Wouff Hong Ceremony. Since the 1920s, these ceremonies have been a staple of ARRL conventions and local "hamfests."

Usually held at the stroke of midnight, the ceremony is a lighthearted, quasi-masonic initiation. It involves hooded figures, solemn vows, and a healthy dose of melodrama. The "candidates" for the ceremony are usually new hams or those seeking to deepen their involvement in the hobby. They are "tried" for their operating sins and eventually "cleansed" by the power of the Wouff Hong.

While the atmosphere is intentionally spooky and secretive, the message is always the same: Operate with courtesy. The ceremony serves to bind the community together, passing down the values of the "Old Timers" to the new generation through humor and shared myth.

The "Rettysnitch" and Other Lore

The Wouff Hong does not stand alone in the pantheon of amateur radio discipline. It is often paired with another mythical device: the Rettysnitch [*shown on the right*].

While the Wouff Hong is generally viewed as the primary tool for correcting "rotten operating," the Rettysnitch was described by Maxim as a device for enforcing "decency." If the Wouff Hong is the gavel of the radio court, the Rettysnitch is the specialized scalpel. Together, they form a legendary arsenal against the "lids" of the world.

These symbols serve as a shorthand for the community's self-policing nature. Because amateur radio is largely self-regulated, these icons remind operators that even if the FCC isn't listening, their peers—and the ghost of The Old Man—certainly are.

Why the Folklore Still Matters

In the modern era of digital modes like FT8 and satellite communications, a wooden stick from 1919 might seem irrelevant. However, the Wouff Hong remains vital for several reasons:

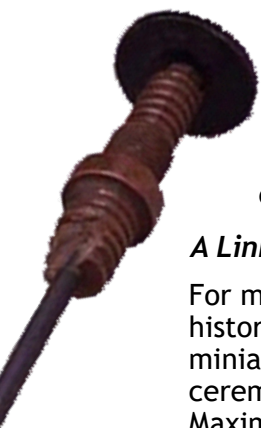
The Fight Against QRM

"QRM" is the radio shorthand for man-made interference. In the early 1900s, it was spark-gap transmitters bleeding across frequencies. Today, it's "splatter" from over-modulated signals or people "tuning up" on top of an ongoing conversation. The Wouff Hong remains the symbolic "threat" that keeps operators mindful of their signal quality.

Preserving the "Gentleman's Agreement"

Amateur radio functions on a "Gentleman's Agreement" (now inclusive of all genders). There are no "policemen" on the bands. The Wouff Hong represents the peer pressure required to maintain order. It encourages hams to:





- Listen before transmitting.
- Give way to emergency traffic.
- Maintain a polite and helpful demeanor.

A Link to the Past

For many hams, the hobby is as much about history as it is about technology. Owning a miniature Wouff Hong or attending a midnight ceremony is a way to connect with Hiram Percy Maxim and the pioneers who built the infrastructure we use today. It turns a technical hobby into a culture.

The Wouff Hong is a testament to the power of satire. What started as a grumpy "letter to the editor" by Hiram Percy Maxim has survived for over 100 years as the most recognizable symbol

in amateur radio. It is a "disciplinary tool" that never actually touches anyone, yet it has successfully shaped the behavior of hundreds of thousands of operators across the globe.

The next time you hear someone "kerchunking" a repeater without identifying, or a "big signal" station ignoring a low-power operator, just remember: the Wouff Hong is waiting in the wings. It serves as a permanent, wooden reminder that the airwaves belong to everyone, and the best way to keep them open is to keep our operating practices from becoming "rotten."

~ John VE7TI

Band Condition Spray - Boost Your Antenna, - Reach the World!



Band Condition Spray isn't just another bottle of mist—it's a high-performance propellant engineered specifically for amateur radio operators who want to push their signals farther and with more clarity. Spray a fine mist around your antenna, and watch the ionospheric-friendly formula enhance propagation across all bands, from HF to VHF. This all-mode compatible solution works with dipoles, Yagis, and loop antennas, delivering consistent DX performance without harming the atmosphere.

💡 **How It Works:** The spray creates a microscopic, conductive aerosol that temporarily alters the local dielectric properties, giving your signal a boost in gain and range. It's safe for the ionosphere, leaving no lasting impact, and can be used multiple times per day during critical DX windows. Whether you're chasing rare DX or simply want reliable local contacts, Band Condition Spray turns "good" into "great".



Why Choose Us?

- **Universal Compatibility** – works on any amateur antenna system.
- **Zero Damage** – formulated to protect the ionosphere and your equipment.
- **Instant DX** – helps you work rare stations with ease.
- **Licensed-Only** – intended for licensed amateur radio use, ensuring compliance with regulations.

Ready to unlock the world from your backyard? Grab a can of Band Condition Spray and start working rare DX today—all while keeping the sky safe! 🌍

Radio Ramblings

Chameleon Project: Digital Radio

by KEVIN McQUIGGIN VE7ZD / KN7Q

Kevin Ahrens
www.kevinahrens.com



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is active in EME,
meteor scatter and
much more. He lives
on Vancouver Island.

[January's Communicator introduced the "Chameleon Project" in VE7TI's editorial column "QRT". If you read John's column, you may have decided to learn about a popular new radio technology in 2026. This issue I'd like to provide some interesting material to help hams understand the current state of the art in radio systems, software-defined radios]

Introduction to SDRs

Learning a bit about digital radio would be a great subject for those "chameleons" interested in broadening the scope of their amateur radio activities. Software-defined radios, or SDRs, and digital modes are "where it's at" for all new radio systems, and every ham should know a bit about how these systems work. Let's cover the basics, look at a couple of interesting aspects of digital radio and examine the current state of the art.

This article is different from most SDR articles because it shows that the development of digital radio was not an intentional objective of the radio industry. Digital radio and SDRs were simply a "spinoff" effect of the amazing advances in digital technology that started in the 1950s with the introduction of transistorized computers.

As microelectronics advanced with the development of integrated circuits (ICs), high capacity memory chips and microprocessors, this opened the door to real time digital signal processing (DSP). The radio industry faced a totally unexpected (and inconvenient) challenge when clever computer systems engineers realized that they could apply these new digital tools to processing radio signals.

We'll begin by looking briefly at how SDR radio systems are built from functional blocks rather than discrete components, and why this approach works [19].

In the second half, we'll look subjectively at innovation rates in the radio and computing fields since 1900 to see how the pace of discovery between the two industries changed over time. Computing took the lead in innovation after the discovery of the transistor in 1947, and has been in that position ever since.

Key to understanding SDRs and digital signal processing is reviewing how radio and computing technology started out as completely unrelated fields: separate disciplines that were irresistibly drawn together, as if by fate, to revolutionize radio and create the powerful new discipline of software-defined radio.

SDR Design Philosophy

SDR receivers digitize RF signals (convert signals from the antenna) to a stream of numbers (called "IQ" data) that can be processed by other parts of the digital receiver. Signals to be transmitted are also represented by IQ data, and these are converted back to RF signals for transmission via the antenna. The IQ data stream is generally composed of integers, but may be floating point (real) numbers in some SDRs.

The sample rate of an SDR determines the highest frequency that can be accurately received or transmitted by the radio [20].

Higher sample rates also capture wider bandwidths of signals. Modern SDRs can have sample rates of several tens to hundreds of MHz.

SDR radios process the IQ data stream using mathematics. The samples run through functional blocks that represent filters, modulators, demodulators, etc. that process the IQ data: each block transforms the digitized signal from one form to another.

Typically, an SDR development package allows the user to "drag and drop" blocks on the desktop. Each block does some form of digital signal processing (DSP) and has at least one input and one output. Blocks are connected together using the mouse. The final product is commonly called a "flowgraph". The flowgraph maps signal flow through the SDR.

This all happens in software - no parts, no wires, no "breadboarding", no soldering, and no power supplies are needed. Most importantly, no expense, no short circuits, and no burned fingers!

Modern SDR packages provide hundreds of DSP blocks. What the SDR radio does is defined by the set of DSP blocks it contains, and how they are connected together. To give a radio different capabilities you just have to rearrange the blocks.

It sounds complicated, but the use of DSP blocks is very similar to those block diagrams we are all familiar with from our ISED examinations. Figure 1 shows the blocks that make up an FM broadcast receiver [21]. This radio covers 88 through 108

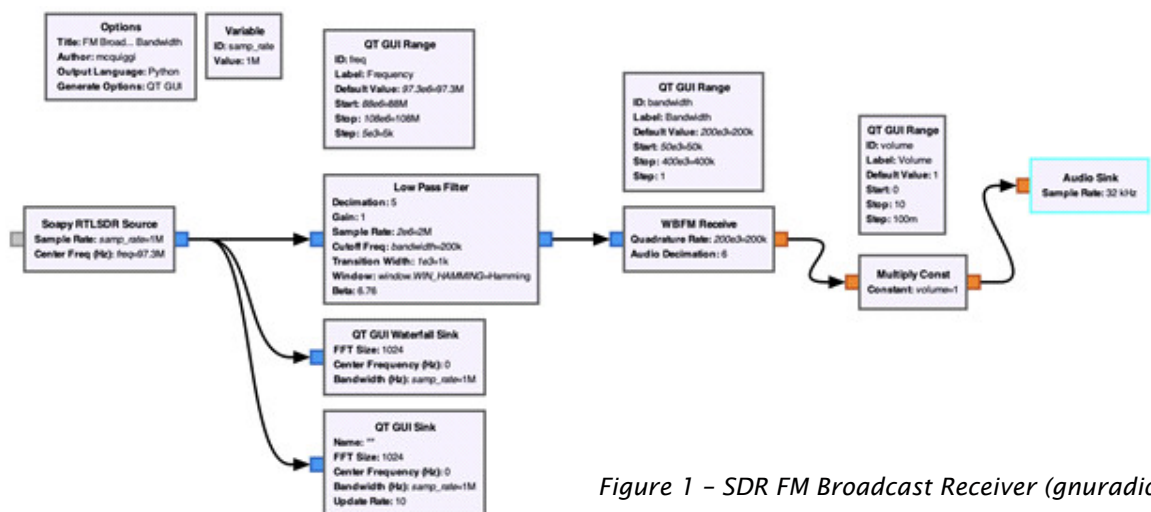


Figure 1 – SDR FM Broadcast Receiver (gnuradio)

MHz and has variable bandwidth and a volume control. It also has a waterfall display and a demodulation display.

The skill in designing an SDR is knowing which blocks will be required, and the order in which they should be connected! If you want to try it, then don't worry: excellent online tutorials and videos are available! See below.

The design philosophy for SDRs is summarized in Figure 2.

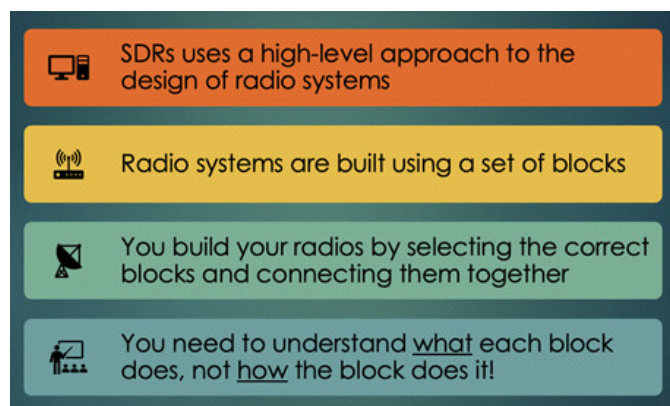


Figure 2 - SDR Design Philosophy

SDRs have many advantages over traditional analog radios, but a big question for people new to the field is why do they work? The answer is that SDRs work because of their digital representation of signals.

The second half of this column will get into some of the details. In the interim, Figure 3 summarizes the advantages of digital signal processing.

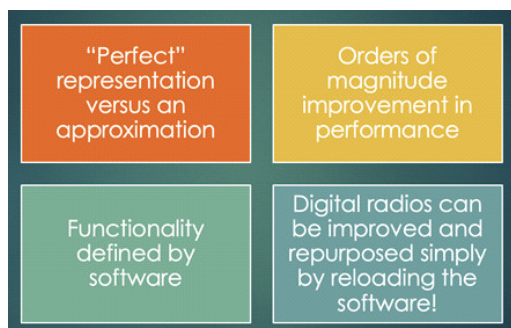


Figure 3 - Advantages of Digital Signal Processing

Building Your SDR

There's not room in this article to fully describe the process of selecting DSP blocks and creating an SDR. Nonetheless, Figure 1 above showed a

functional FM broadcast band receiver that was designed with the excellent open source SDR package called "gnuradio". Gnuradio is free, and runs on Windows, MacOS and Linux. It's an excellent learning environment for students and even seasoned hams interested in learning about digital radios and SDRs. Go to <https://gnuradio.org>.

I have used gnuradio for over a decade. It has a bit of a learning curve, but only because building SDRs is different than soldering analog components together - but good tutorials and YouTube videos are available. Interested readers can contact me via email for some good "newbie" links.

Enough of the usual SDR basics. Let's shift gears now and look at how software-defined radios became possible in the first place.

Analog Radio and Early Computing

Analog radio defined the state of art in all sectors of radio communication for almost a century. Passive components (resistors, capacitors, inductors, antennas) were coupled with active devices (vacuum tubes and later, transistors) to develop radio circuitry and communicate first locally and then globally. See Figure 4 for an example of a leading-edge AM broadcast receiver from 1930.

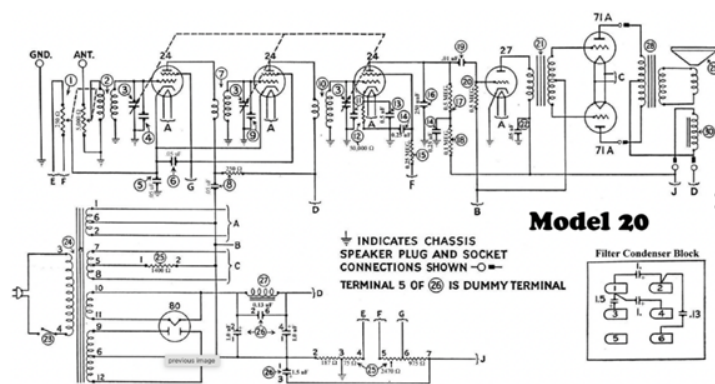


Figure 4 - Philco Model 20 (1930)

In these early decades of the 20th century, amateur radio contributed significantly to the improvement of radio technology, especially in the earliest days of radio, because the science was not well understood [1].



Radio science and this new field called “electronics” stabilized by the mid 1930s, and while subsequent decades saw some improvements in sensitivity and miniaturization, for example, the field was relatively stable. New modes such as single sideband (SSB), television and advanced technologies such as radar systems were developed in the 1940s and 50s, but the underlying electronics technology had reached a level of maturity that didn’t demand rapid change. This is key to our discussion here.

Things were different in the field of electronic computing.

The idea of a stored-program computer first arose in the 1800s in a paper by British mathematician Charles Babbage [6]. A stored-program computer uses a list of instructions that it follows to complete an assigned task. Babbage built a mechanical machine called the “analytical engine” and proved that stored-program computing could solve problems, but the machine’s gears could not be machined accurately enough to allow the computer to produce correct answers for more than a few operations. Gear errors accumulated as the machine worked, and this would produce incorrect results. Some of Babbage’s machines are on display at the UK’s national museum of science and technology in London [7].

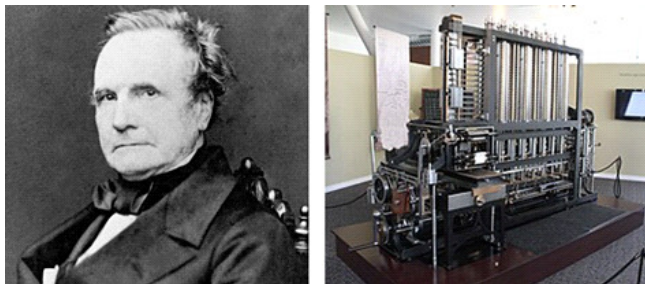


Figure 5 – Charles Babbage and his “Difference Engine”

World War II (WW2) drove the need for electro-mechanical computers, particularly in the field of cryptanalysis. Secret projects developed systems that could help break enemy military codes. Electro-mechanical solutions evolved to an all-electronic stored-program computer called “Colossus” by the end of the war [22]. The existence of these machines was a state secret, and not revealed to the public until the 1970s.

After WW2, the researchers and technicians who had developed these secret systems returned to universities and industry. While they could not discuss their work during the war, they could not be prevented from coming up with “new” ideas.

This subterfuge created a new field called computing science, and a new industry. Stored-program computing emerged from the shadows and the development of electronic computers proceeded quite rapidly [2][3]. Vacuum tube-based computers became faster and more capable. A new science was on its way.

This initially had little effect on radio and telecommunications technology. Radio engineers and radio manufacturers were comfortable with their technology, and the radio industry moved slowly. Radio sets were “good enough”. There was little overlap between the worlds of radio and computing, and to most engineers and researchers the two fields were separate technological disciplines.

This was to change markedly in the coming decades.

The Transistor

The transistor emerged from Bell Labs in 1947 as an alternative to the vacuum tube [4]. Transistors could amplify signals, serve as detectors and electronic switches, and perform the same functions in circuitry as vacuum tubes, but could do so with much more efficiency. With power requirements several orders of magnitude lower than required for vacuum tubes, transistors began to be deployed in radio systems and in the new field of digital computing.

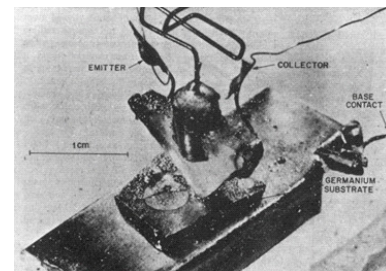


Figure 6 – The First Transistor, 1947 (Bell Labs)

The radio industry adopted the transistor reluctantly at first, as the entire field was based on vacuum tube technology. Vacuum tube radio designs were converted to transistor-based units. Critically, the transistor didn’t spawn any immediate new innovation in radio.

Effect on Computing

In the computing field, the introduction of the transistor opened up the entire industry to exciting new possibilities. Quickly adopted, the transistor found its way into all new computer systems. Innovation was energized, and new “transistorized” computers were faster, smaller, required less power to operate, and based on more complex instruction sets.

Researchers at Bell Labs created the first experimental transistorized digital computer in 1954. The first commercial all-transistor computer, the Philco TRANSAC, was announced in 1957 [23], but International Business Machines (IBM) dominated the commercial market. From the late 1950s, the IBM 7000 series, and then the desk-sized IBM 1401 and 1620 systems [5] set the standard for other manufacturers. These machines were slow and inefficient compared to today’s systems, but accelerated interest in the new field of computing science and computer systems engineering.

Digital computing was to have a profound effect upon radio beginning in the 1980s.



Figure 7 – IBM 7090 and 1620 Computers

Moore’s Law

Improvements in transistor technology and miniaturization were the cornerstone of the new microelectronics industry in the 1960s and 1970s. By putting multiple transistors in a single package, soon to be called an “integrated circuit” (IC), the efficiency of computing jumped by several orders of magnitude. In 1965, Gordon Moore, a founder of a new company called “Intel” postulated that for at least the next decade, that the number of transistors on an IC would double about every 18 months [8].

This came to be known as “Moore’s Law”, and the trend continued after 1975. In 1975 the new

Z80 microprocessor contained about 8,000 transistors, while by 2000 the Pentium III processor contained about 15 million transistors. In 2020, the Apple A13 processor used in iPhone 11, contained about 7,5 billion transistors. See the top graphic in [8].

Despite the discovery of new technologies that will allow smaller and smaller transistors on semiconductor wafers, there is a physical limit to how small a transistor can be, so most experts expect that this limit will be reached by about 2030 or 2035.

A computer system’s speed of operation and computing efficiency are related to the density of its ICs and other circuit components. More complex ICs and denser memory chips operate faster [24]. This is why Moore’s Law matters - it allows a fair comparison of the relative “power” [9] of computers from year to year.

The bottom line is that because of the incredible improvements in the science and technology of computing, today’s highest performance CPUs are billions of times faster than early vacuum tube systems of the 1950s [10]. Computational speed is generally related to system efficiency, and our smartphones or cheapest tablets would “blow the socks off” the most advanced computer of the 1950s.

How Does This Relate to Radio?

Now we have enough background to get into the core topic of this article.

We have determined that by 1940, radio science and the radio industry were stable, with far less innovation taking place than in their early phase of development. Digital computing emerged in the 1940s, and entered the commercial arena after WW2. Early computers used vacuum tubes, but the discovery of the transistor in 1947 had far more impact on the new field of computing than it did on the radio industry.

Radio’s rate of innovation was low, while computing’s was high. See Figure 8. Innovation in the computing realm outpaced that of the radio industry around 1930, and has been ahead ever since.

Caveat: this is a subjective comparison based on my personal knowledge of both radio and computing history [18].

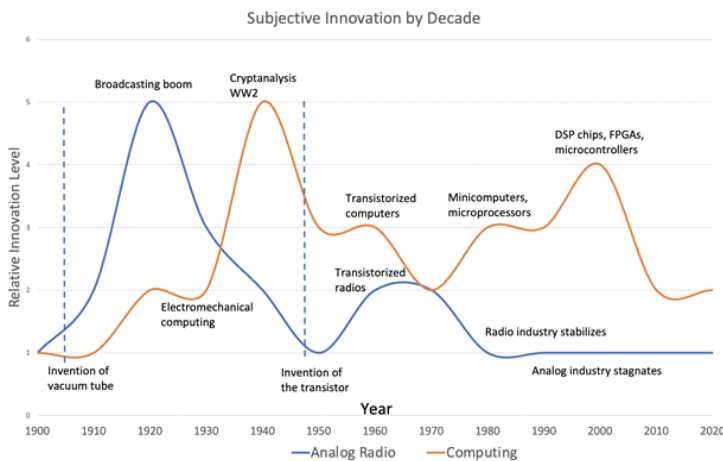


Figure 8 – Relative Innovation Rates

The radio industry did adopt the transistor, but only in a low-innovative manner, by reworking schematics of existing vacuum tube radios to use transistors instead. Certainly, some new designs arose, but, significantly, these new circuits simply perpetuated the “analog” approach to radio: using passive components augmented by transistors to receive and demodulate RF and send signals to an audio device for the listener. And the same in reverse, for transmission.

In contrast, as computer engineering progressed, processors became orders of magnitude more powerful. In the 1980s computing science academia and the computing industry began to look at digital signal processing (DSP): using computing power to mathematically analyze and manipulate radio signals.

In parallel, the radio industry stuck with their “tried and true” analog designs. Industry leaders believed that all was well on their “patch”: their radios worked, customers bought them, and radio communications continued as it had for the past fifty years.

This complacency in the radio industry proved to be a major mistake, one that would lead to the biggest upheaval in the industry in five decades! Let’s see why.

Maxwell and Heaviside

James Maxwell was a Scottish mathematician who lived in the 1800s. He defined the fundamental theory of electromagnetic radiation in 1861 and 1862. It declared that electricity,

magnetism, and light are closely related phenomena, and that they are different manifestations of a universal natural effect. Maxwell’s theory explained phenomena such as radiation, polarization, and propagation of electromagnetic waves [11].

Maxwell developed a set of twenty complex equations that fully explained radio. These equations were unwieldy, and it fell to Oliver Heaviside, a brilliant British mathematician of the late 19th and early 20th century to apply further math to the problem and reduce Maxwell’s twenty equations to a set of four “partial differential” equations in 1884 [12]. These equations are still in use today.

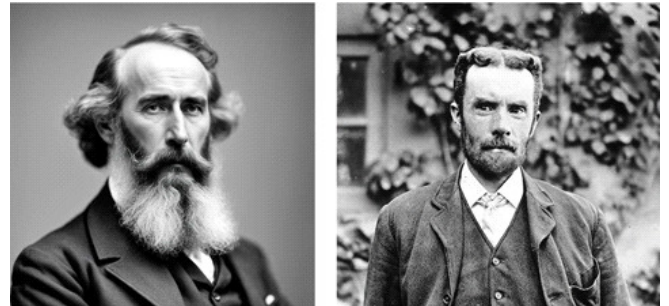


Figure 9 – Maxwell and Heaviside (Wikipedia)

Maxwell and Heaviside are important because of their discovery of the fundamental mathematical nature of radio.

The Maxwell-Heaviside equations fully describe radio, and all characteristics of radio, perfectly. This is a key takeaway from this article! Radio is a natural phenomenon, but the behaviour of this phenomenon - all aspects of it - can be completely and perfectly described in mathematical terms.

This perfection is the key to why DSP and software-defined radios are superior to analog radio systems.

Let’s continue.

Analog Radio Approximates

Analog radios - those designed with traditional components (resistors, capacitors, inductors, and tubes or transistors) offer analog approximations to the fundamental mathematics of radio as described by the Maxwell-Heaviside equations.

Approximation is the key. Passive and active components, connected together in the proper configuration, can process received RF, and generate RF from baseband signals and produce (or consume) RF radiation through an antenna to support radio communication between two stations.

The analog circuit does not perform the mathematical calculations required by the equations, it only approximates it. This is not to say that the approximation is not good; radios work, after all, and analog radio has been around for over a century.

But with DSP, we can now do much better.

DSP Does the Math

In the 1980s computer technology and CPU power finally reached the point where the real time calculations of the Maxwell-Heaviside equations came within reach. This allowed radio signals to be received, and synthesized for transmission completely within the mathematical realm.

Signals could be represented numerically, stored in data structures, and processed by the appropriate equations to modulate, demodulate, amplify, convert, filter and transform the data stream in any way necessary. A new term “digital signal processing” or DSP came into use [13].

By the early 21st century, DSP radios that performed all signal processing functions using DSP came to the market. These new devices were called “software-defined radios” (SDRs) because of the fact that all of their signal processing functionality was defined in software.

This change caught many traditional (analog) radio manufacturers by surprise. A DSP radio’s flexibility, sensitivity and selectivity was far superior to that of analog radio, so it was only natural that customers moved towards this choice.

Radio companies who had stabilized on the analog radio paradigm were on their back foot, and faced an existential crisis. Unless these firms adapted fast they would find themselves with less capable products and be forced out of business. Those companies that had not been paying attention to developments in the DSP and SDR fields were the first victims.

Even traditional radio firms who had been paying attention to developments in DSP faced an extremely steep learning curve. This was another challenge.

DSP is a highly technical field, and development of SDR products require a much different skill set than that of analog radio design. Complacent companies and staff who had stuck with the “old reliable” analog radio approach faced challenging times. Many companies were left scrambling to hire qualified staff, re-train existing engineers and technicians, and re-design their product lines. Not all companies made it through this challenge.

Resistance to Change

Time for a bit of evangelization.

SDRs are far superior to their analog predecessors. While many hams are inured to their own experience and are more comfortable with the analog technology that has served them through their amateur radio “careers”, the fact is that digital techniques are superior to analog and provide better performance, a richer capability set, and more flexibility. Radio communications (including amateur radio) will be more capable and more efficient when we adopt this new technology.

Progress is unavoidable as humans discover more about the natural world. One hundred years ago, amateur radio was conceived by scientists and governmental leaders as a service that keeps up with (and can advance) the state of the radio art. To ignore any type of significant new technological development is a disservice to our hobby.

Technological progress may not always be easy, and it does not mean that our previous experience with the hobby has less value, but to avoid new technology on principle is not in the spirit of amateur radio. Would any ham who learned of a new HF antenna that has ten times the effectiveness of a Yagi reject that antenna because it is “different”? I don’t think so.

I write the previous three paragraphs because we all know of amateurs who are “stuck in a rut” and resistant to change. There is particular resistance to SDRs and the use of digital modes like FT8, Q65 or FreeDV. These ops need to accept technological change and embrace new approaches to operating.

Advantages of Software-Defined Radio

This table summarizes the characteristics of DSP and software-defined radios versus their analog predecessors. Technical documentation which quantifies these characteristics, such as sensitivity, is available online [14].

Characteristic	Comparison to Analog Radio
Sensitivity	Much higher sensitivity than traditional modes such as CW and SSB. Digital modes such as Q65 and FT8 can detect and decode (i.e. demodulate) signals well below the noise floor of the receiver. This is possible because of the application of advanced mathematical techniques to the received signal, which is represented internally as an IQ data stream [15].
Selectivity	Mathematical representation of circuit components such as high-, low- and bandpass filters results in filter envelopes that can be thousands of times “sharper” than the most expensive analog filters. Additionally, DSP techniques can separate interfering signals using mathematical techniques with precision impossible for analog components.
Accuracy	Frequency accuracy of an SDR can easily be within a few Hertz at microwave frequencies, and sub-Hz at VHF and below. The SDR can incorporate a GPS receiver to ensure frequency stability. Periodic re-calibration of SDR transceivers using frequency standards and other devices is not necessary.
Reproducibility	SDR characteristics are defined by software, hence every radio’s <u>capabilities</u> and performance will be identical to that of every other radio [16]. Firmware upgrades can add new features, fix bugs, and improve performance.
Flexibility	SDR software defines the radio’s capabilities and functionality. With an SDR, the same hardware can be programmed differently to produce a radio with completely different capabilities. An HF receiver can become a VHF transceiver, or a CW rig can become a digital television receiver. To change from one type of radio to another, just upload new firmware. Analog radios cannot do this - each radio is designed for one set of <u>functionality</u>. Changes will require a revised schematic and lots of time on the soldering bench!
Cost	SDR receivers are available for under \$25 that offer performance better than \$1000+ analog radios of yesteryear. SDR transceivers that cover all frequencies from 60-70 MHz to 6 GHz are under about C\$400. These transceivers can be extended to cover the HF bands using low cost up- and down- converters. Notably, all the major amateur radio manufacturers have converted their radios internally to SDRs. These companies understand that the future of radio is digital, but they offer radios with traditional user interfaces (switches, buttons, dials, et cetera) because these interfaces are well understood by amateurs, and they work well. This is a case where the new radio paradigm has learned from the previous analog paradigm. There is no reason to discard a functionally complete (and well understood) user interface just because the radio’s internal circuitry has “gone digital”! [17]

An Irresistible Force

In the past decade, commercial radio manufacturers have been forced to retool and adopt DSP techniques. The emergence of these powerful DSP capabilities has acted like an irresistible force, drawing the field of analog radio into its sphere of influence. Barring a future technological apocalypse, there's no going back.

Manufacturers offering traditional analog radios are few and far between, and companies still active in this sphere often promote simplicity, tradition, low cost, and their linkage to radio's "classical" past.

This is not a bad thing, and it is fun to experiment with and use analog radio equipment. It is important to have an understanding of history because analog radio technology served as the foundation of our hobby. It gives us a sense of where amateur radio has come from.

But it also important for us to move on and incorporate SDRs and DSP into our ham shacks. This is progressive, interesting, and also our responsibility as amateur radio operators because the activity is conceptualized (and even defined in legislation of many nations) as one that not only provides service to the community, but as a field that understands current technology and seeks to advance the state of the radio art.

References:

- [1] Amateurs had an advantage over companies developing radio equipment because they were able to move more quickly in response to new discoveries in radio science. In many cases, amateurs made these discoveries, and their work was quickly adopted by industry.
- [2] The driving force for the development of stored-program electronic computers was cryptanalysis – the need to “break” enemy military codes during WW2. While the wartime success of the UK's Bletchley Park is well known, Poland and other nations were largely responsible for early insights into how an electro-mechanical machine (and later,

Conclusion

That's it for this issue. I hope that this overview of software-defined radio has given you insight into how the technology works, and how the SDR design philosophy differs from that of traditional analog radio.

SDRs have significant advantages over analog radios because of their leverage of digital signal processing. This has only become possible due to the work of historical figures like Babbage, Maxwell and Heaviside, and the incredible achievements of the microelectronics industry over the past fifty years.

More importantly, I hope that our review of analog radio's history has given you insight into the risk of complacency. It is not uncommon for innovation in unrelated fields to generate totally unexpected risks for companies that have become too complacent in their fields. The radio industry certainly found this out when SDRs burst onto the scene in the 1980s.

Keeping up with current technologies such as DSP and SDRs is important for amateur radio operators, so that the hobby can continue to contribute to advancement of the radio art in the 21st century. I would encourage all readers (and “chameleons”!) to dig into this topic, learn more for themselves, and even download the free gnuradio package.

Feedback on Radio Ramblings is always welcome and may be directed to the Editor, or directly to me at mcquiggi@sfu.ca. Thanks for reading!

73,

~ Kevin VE7ZD / KN7Q

the first digital computers) could be created to solve this problem. See “The Codebreakers” by David Kahn, ISBN 0684831309. Available from <https://amazon.ca>.

- [3] The USA's ingenuity led them to “break” Japanese military codes without ever having seen a Japanese cipher machine. This is an amazing story, described at https://en.wikipedia.org/wiki/Type_B_Cipher_Machine.
- [4] The importance of the transistor cannot be understated. Wikipedia has an excellent article on this at <https://en.wikipedia.org/wiki/Transistor>. Well worth reading for every amateur radio hobbyist!

- [5] See https://en.wikipedia.org/wiki/Transistor_computer for a very interesting history of transistorized computer systems.
- [6] See https://en.wikipedia.org/wiki/Charles_Babbage and an article on the first computer programmer Ada Lovelace at https://en.wikipedia.org/wiki/Ada_Lovelace.
- [7] The analytical engine was designed by British mathematician Charles Babbage in 1837 and programmed by his assistant Ada Lovelace. See <https://www.sciencemuseum.org.uk/objects-and-stories/charles-babbages-difference-engines-and-science-museum>. More detailed information on the analytical engine is at https://en.wikipedia.org/wiki/Analytical_engine.
- [8] Moore's Law and related topics are described at https://en.wikipedia.org/wiki/Moore's_law#Forecasts_and_roadmaps.
- [9] Computing "power" is a fuzzy concept. Generally, a system's power is determined by calculating the speed at which the system can compute a standard set of operations, including mathematical calculations, decision making, memory access, and input/output operations.
- [10] See [https://en.wikipedia.org/wiki/Instructions_per_second#Millions_of_instructions_per_second_\(MIPS\)](https://en.wikipedia.org/wiki/Instructions_per_second#Millions_of_instructions_per_second_(MIPS)). The AMD "Ryzen 3990X" processor (from 2020) outperformed the "UNIVAC 1" vacuum tube based machine from 1951 by about 1.2 billion times.
- [11] See https://en.wikipedia.org/wiki/James_Clerk_Maxwell.
- [12] Maxwell's equations, and Heaviside's improvements are described at https://en.wikipedia.org/wiki/Maxwell%27s_equations.
- [13] At first, due to CPU computational limits, DSP was limited to baseband operations (e.g. operating on an audio signal that was to be converted to RF and transmitted, or in reverse to be received), but as Moore's Law continued to prevail DSP's capabilities to operate at RF frequencies improved. By the 21st century, CPUs had the power to operate directly at RF frequencies, so the entire signal processing chain could be implemented mathematically.
- [14] For example, the Sherwood Engineering receiver performance spreadsheet, available at <http://www.sherweng.com/table.html>.
- [15] See other columns in Radio Ramblings for an explanation of IQ sampling and how SDRs work.
- [16] This is accurate, but to dive a bit deeper, every SDR depends on an analog "front end" that translates RF to a digital data stream (called "IQ" values) for RX, and in reverse for TX. The fact is that RF (electromagnetic signals) are an analog phenomena, so digital signals cannot be received nor transmitted directly. SDRs can differ in performance if their analog front ends differ, but (and largely due to the stability of analog radio science – a good outcome of the previous radio paradigm's work) these front ends can be designed and manufactured with very high stability and good performance. SDR functionality is defined by software, and the same software running on other hardware will perform in exactly the same manner.
- [17] Interestingly, in the field of aviation a similar paradigm shift has taken place in the area of flight avionics and cockpit displays. Like amateur radio, flight instrument back-end hardware has "gone digital", but the traditional cockpit displays (airspeed, rate of climb, airspeed indicator, et cetera) have retained their "old school" appearance. "Glass cockpit" displays provide a full set of instrument readings on large laptop-like screens, but the simulated analog basic flight instruments are there for backup.
- [18] This subject would be an excellent topic for academic research!
- [19] In a nutshell, it works because RF signals, audio signals, and all modulation, demodulation, filtering and other functions are performed mathematically.
- [20] An SDR's data stream has a predetermined "sample rate": the number of samples of the underlying analog signal taken by the SDR each second.
- [21] The flowgraph in the figure was defined in about 5 minutes using the free, open source SDR package called "gnuradio". See <https://gnuradio.org> and contact the author for some good introductory material on SDRs. It is trivial to change this flowgraph so that it becomes a 2m or 70cm receiver instead.
- [22] An article on "Colossus" is at https://en.wikipedia.org/wiki/Colossus_computer.
- [23] See https://en.wikipedia.org/wiki/Philco_computers.
- [24] There's an entire article in this statement. As component density increases, the heat generated by the individual transistors and components on the IC must be dissipated. If this heat cannot be "dumped" quickly enough then it will destroy the IC. Microelectronics is at the point now where the heat dissipation issue has become as much as a limiting factor as is individual component size. Looking to the future, advances in quantum computing may make all our computers obsolete; then this heat issue will be moot. Look for an article on quantum computing in the near future.

The Compass Lied. The Ionosphere Didn't

A True Story from the 3YØPI Peter I Island 1994 DXpedition

by SCOT MORRISON KA3DRR



Scot Morrison's KA3DRR Experience is a gritty, authentic exploration of ham radio culture, radiosport, and community storytelling through the lens of one operator's journey.

The compass didn't point north. It tried to point down - straight into the ice—like the Earth had grabbed the needle by the throat.

That's what happens near the Magnetic South Pole. The rules don't bend; they tilt. Instruments stop behaving politely. And in a place where a wrong heading can cascade into mis-aimed antennas and self-inflicted interference, "close enough" is how a mission dies quietly.

So the 3YØPI team did what field operators have always done when the primary system fails: they stopped trusting the dashboard and started trusting the terrain. Mountains became instruments. Geometry became a lifeline. Frozen fingers learned to do math in the wind.

And once their antennas were aligned by sight - no satellites, no blue dot, no second chances—the call went out:

"3YØPI"

The world answered like a stampede.



I. The Compass That Just Wouldn't Cooperate

Robert Schmieder, the navigator, discovered the problem the instant he tried to work the needle. At these latitudes the Earth's magnetic field lines dive steeply into the planet. A normal compass isn't designed for that. The needle doesn't want to swing; it wants to pin.

Instead of pointing North, it kept trying to point straight down into the glacier.

To even get a usable reading, Schmieder had to tilt the compass roughly 30 degrees just to keep it from sticking. That maneuver alone told him everything he needed to know: the compass could not be trusted for the precision this camp required.

Because they weren't just "finding direction." They were positioning big antennas with enough accuracy to keep stations from stepping on each other. On a crowded expedition setup, small heading errors become operational failures: mutual interference, degraded receive, wasted openings, and the worst outcome of all—an on-air presence that can't hear.

So expedition leader Ralph Fedor shifted the team into a lower-tech, higher-reliability method: visual references and geometry.

They used the landscape like a sextant. By sighting a peak called Salknappen against a prominent rock known as Tvistein, they established True North the old way: by turning the world itself into a reference frame.

Engineer's field note: Near the poles, compasses can become unreliable because magnetic dip increases dramatically. The team used landmarks and simple geometry to set true headings - critical for accurate antenna orientation and avoiding self-interference.

"When the primary system fails, the expedition doesn't stop. It degrades gracefully."

II. Breaking All the Radio Rules

By February 1, the camp was operating—generators humming, coffee cutting through cold air, condensation turning the radio tent into a strange mix of damp and freeze. Inside, the station environment didn't feel like a hobby space. It felt like a small outpost trying to hold a line open to the rest of the world.

Then came the first call: 3YØPI.

The response wasn't polite. It was immediate and massive—a dense wall of stations piling in at once. The operators had to pick individual calls out of layered noise, the way you pick a voice out of a crowd with your eyes closed.

And here's the twist: their prediction tools suggested certain frequencies shouldn't work well at all.

Antarctica didn't care.

A solar event - often the kind of thing that ruins communications—worked in their favor by energizing the ionosphere in a way that produced unexpectedly strong propagation. Ralph described it in the only language that fits when the sky turns into a machine:

"It's like the atmosphere is acting as a giant tube for our signals."

"The models said it shouldn't work. Antarctica didn't care."

Contacts came in at a rate that felt unreal—about two per minute—a sustained sprint in conditions where everything else demanded slow, careful movement.

The science bit: Solar activity can change the ionosphere's structure enough to create unusually efficient propagation paths. Forecasts and models are useful, but the ionosphere is a living medium—and it occasionally rewrites the plan.

"When propagation opens hard, your limiting factor becomes cognition: attention, filtering, decision-making under pressure."

**DIGITAL LEAP:
S. TODAY**



D. DANGER REMAINS.

**IOS TO 4K STREAMS.
SATELLITE GUIDANCE.**

. WINDS STILL ROAR.

III. Shoveling for Your Life

Then the continent reminded everyone who holds the real authority.

On February 4, a major blizzard hit, bringing not just snow but frazil ice—tiny, powdery particles that behave like an abrasive infiltrator. Frazil gets into everything. For engines, it's a slow sabotage: it clogs, chokes airflow, compromises moving parts, and can push generators toward failure.

Generators failing in this environment isn't inconvenience. It's a countdown.

- If the generators choke, power drops.
- If power drops, heaters fail.
- If heaters fail, radios freeze.
- If radios freeze, the mission ends.

So the entire team rotated into survival maintenance. They shoveled in four-hour shifts, day and night—clearing intake paths, managing drift, keeping the equipment breathing. The work wasn't glamorous. It was the kind of labor that never makes a highlight reel—until you realize it is the reason there's a reel at all.

When the ship returned and extraction began, they executed a second kind of discipline: total cleanup. Every scrap. Every piece of waste. Every crate. No abandoned fuel, no forgotten debris, no "someone else will handle it."

"Maintenance is the real hero of field operations - unsexy work that keeps the story from ending early."

As the helicopter lifted the last load, the wind began erasing evidence of the camp almost immediately—footprints disappearing like the island was reclaiming itself.

The green rule: The team brought roughly 15 tons of gear and removed all of it, including waste. They used shipping crates as floors and tables to reduce trash and compress logistics. In polar environments, cleanup is part of the mission, not an afterthought.

"If the generators choke, the mission dies. So you shovel like your life depends on it - because it does."

IV. Then vs. Now: A Whole New World

Return to that same spot today and the first difference is what you wouldn't have to fight.

A modern smartphone with GPS would give position and heading without magnetic drama. Satellite navigation shrugs at dip angle. You'd be able to establish bearings quickly, log with redundancy, sync time automatically, and coordinate with a global network in ways that were science fiction to most operators in 1994.

"Connected" has also changed shape.

Back then, connection was a voice - fragile, fading, hard-earned. Today, connection can mean broadband, streaming, automation, and digital modes that decode signal so deep in the noise it sounds like nothing at all to human hearing.

But Antarctica is still Antarctica. Cold still kills batteries. Wind still punishes sloppy sheltering. Moisture still finds the seam you forgot to seal. The environment remains the editor-in-chief, cutting your plan down to what actually works.

Tech update: Modern systems increase safety and reliability - GPS, automation, remote monitoring, and robust digital communications. But they can't remove environmental consequence. They only change where the consequences show up.

"Technology reduces risk, but it also reduces the amount of yourself you have to spend."

V. A Message That's Still Flying

Here's the last frame - the one that makes the whole story feel bigger than ice and antennas.

When those operators transmitted from the glacier in 1994, the radio waves didn't stop when the camp shut down. They didn't end when the helicopter left. They didn't dissolve when the footprints disappeared.

They kept going - outward at the speed of light—spreading, weakening, becoming harder to detect, but still traveling.

Those signals are now unimaginably far away, moving through the dark between stars. A faint, expanding shell of human intention - nine operators on a remote island briefly louder than the silence.

This is the deeper meaning of radio in extreme places: you don't just exchange reports. You place a trace of yourself into the physics of the universe.

Physics fact: Electromagnetic waves propagate indefinitely through space. Their energy disperses with distance, making them weaker and harder to detect, but they do not "stop." The universe keeps the receipt.

"Those radio waves didn't stop when the camp vanished. They just got quieter while they kept going."

Field Lessons for Operators and Expedition - Minded Readers

1. **Your instruments are not reality.**
Near the poles, the compass becomes unreliable. In RF, prediction tools can be wrong. Treat instruments as advisors, not authorities. Verify with the environment.
2. **Build a fallback stack before you need it.**
3YØPI survived the compass failure because they had an alternate method. Operators need equivalents: manual procedures, alternate configs, paper notes, spare power paths, and the skill to operate without the shiny layer.
3. **Alignment is strategy, not detail.**
Antenna headings and station layout aren't "setup chores." They determine what the station can hear, how clean it will transmit, and how resilient it will be under pressure.

4. **When conditions spike, cognition becomes the bottleneck.**
In pileups and openings, the limiting factor isn't the radio. It's attention, working memory, and disciplined exchange control. Train the mind like you train the station.
5. **Maintenance is not secondary - it's central.**
Shoveling snow to keep generators alive is the same doctrine as protecting a portable station from wind, salt, sand, or cold. The boring routines are what keep you on the air.
6. **Leave no trace is operational professionalism.**
Cleanup is part of competence. You don't just "use" environments - you steward them. Good operators leave the site better than they found it.
7. **The signal is bigger than the contact**
Every transmission is a physical event that continues outward. Radio is still one of the few human acts that literally leaves Earth and keeps going. That's not romance. That's physics - with meaning attached.

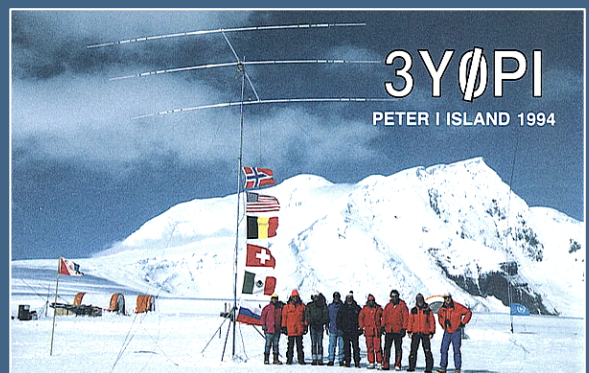
~ Scot KA3DRR

CQ Like You Mean It. Contest Like You Own It.

Read the original story: <https://theka3drrexperience.substack.com/p/the-compass-lied-the-ionosphere-didnt>

The KA3DRR Experience is Scot's site where you will find a vast array of topics of interest to amateur radio.

- The KA3DRR Experience Google Blog URL <https://ka3drd.blogspot.com/>
- The KA3DRR Experience Substack¹ URL <https://theka3drrexperience.substack.com/>
- The KA3DRR Experience YouTube URL <https://www.youtube.com/channel/UCyIPOOn3Uky55Nv2vRw51rQ>
- The KA3DRR Experience Facebook URL <https://www.facebook.com/KA3DRR>
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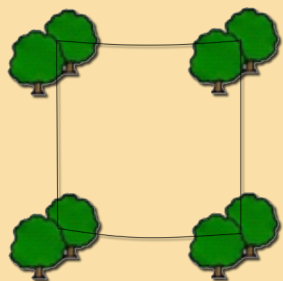




Alan J, Wilson N0XO has been a ham since 1977. In the first decade he was a spotter for the National Weather Service reporting and helping in several tornadic events in the southeast United States.

Antennae:

String a horizontal loop



The ideal HF antenna is often described as multiband, inexpensive, low-maintenance, easy to match, efficient, and quiet. While no antenna satisfies every requirement perfectly, the horizontal full-wave loop comes remarkably close. This article documents the construction, deployment, and long-term operating results of a **160-meter horizontal loop antenna** built using natural supports, along with measured and observed performance across the HF spectrum.

Although this installation benefited from ample space, the same principles apply to smaller properties by scaling the loop for 80 or 40 meters, even 20 meters. This is how I did it and the results were very good. My first go at this antenna I soldered all connections. I recommend you solder and use copper split bolts in addition. Remember to leave plenty of slack in

the wire and dacron cord if you are subject to high winds. I put it up taunt the first time and it did break or stretch the wire a couple of times till I learned to leave slack. After that it only came down after high winds broke a large limb above the antenna and it dead centered one portion of the antenna. The dacron rope never broke.

Site and Supports

The antenna was installed on a ranch in Montana, using five mature pine trees located over a pasture and pond. Tree heights varied, resulting in an uneven loop shape. Perfect geometry is not required for effective operation; horizontal loops tolerate irregular shapes with minimal performance penalty.

Because no mechanical lift or cherry picker was available, all support lines were installed from the ground. I used dacro rope over a limb as a pulley. Even though movement of the limb did wear on the rope it never gave out. I used a compound bow and arrow to lauch the string over my preferred limb. Your method is whatever you can use to fly over the limb of choice. I tried casting with the fishing reel only but I never was able to place it where I needed but I could nail it usually spot on with the bow. Caution: Always plan your shot with nothing that could be damaged by a falling arrow. When the arrow comes down it can hurt still even without a sharp point. If you resort to a coax feedline you'll have a single band antenna. You can use a standard tuner to match 50 ohm coax to the 450 ohm windowline by using a 4 to 1 balun. I do highly recommend having a tuner that will do balanced line it gives you an all band antenna.

Support Line Installation Method

Only **Dacron rope** was used. Other materials were tested previously and failed quickly due to UV exposure and weathering.

A compound bow was used to place lines over limbs:

- Broadhead removed
- Solder wrapped near the arrow tip covered with electrical tape to add weight
- 20-lb fishing line tied to the arrow

- Reel mounted on a short rod placed in a bucket

The arrow was shot over a selected limb, the fishing line reeled back, and Dacron rope pulled into position. If the line snagged on pine cones or crossed an unusable branch, it was simply retrieved and re-shot. Trees are patient; operators must be as well.

Egg-type ceramic insulators were installed on each rope, creating a simple pulley system that allowed the antenna to be raised or lowered for tuning and maintenance.

Antenna Wire and Materials

The loop conductor was **#12 stranded THHN copper wire**. Solid conductor wire is not recommended; repeated movement from wind will cause it to fatigue and break. #14 stranded wire is an acceptable alternative and is lighter, less expensive, and easier to handle.

Materials Summary

Component	Specification
Loop wire	#12 stranded THHN copper
Alternate wire	#14 stranded copper
Support rope	UV-resistant Dacron
Insulators	Ceramic egg type
Feedline	450-ohm window line
Coax (optional)	RG-8X
Baluns tested	4:1 current, 1:1 current

Loop Length and Feed Point

The loop length was calculated using the standard full-wave loop formula:

Loop Length (feet) = 1005 / Frequency (MHz)
but length will vary.

For 160 meters, the loop was initially cut slightly long and trimmed in **5-foot increments** to bring resonance into the band. Trimming was performed symmetrically around the loop. I ended up cutting the loop shorter than specified in the formula to find resonance for 160meters.

The feed point was placed near a corner on the longer side of the loop. This location provided convenient routing and stable impedance across bands.

Copper split bolts were used for all electrical connections between loop wire and balun or feedline.

Feedline and Shack Entry

Approximately **90 feet of 450-ohm window line** ran from the loop to the outside wall of the shack. The shack itself was a dedicated, insulated room built inside a barn, which proved invaluable during Montana winters.

The ladder line was:

- Supported at multiple points
- Kept clear of metal surfaces
- Routed through a 2-inch PVC conduit installed in the wall

Initially, the ladder line fed a **balanced tuner directly**. Later experiments included:

- 4:1 current balun feeding RG-8X
- 1:1 current balun feeding RG-8X

No measurable difference in transmit or receive signal strength was observed between these configurations. The 4:1 balun provided slightly easier tuning, but performance remained unchanged.

Antenna Raising Procedure

The loop was raised incrementally by one person:

1. Pull loop upward at one tree
2. Tie off support rope
3. Move to next tree
4. Repeat until all supports were at operating height

Final positioning placed each egg insulator approximately **6 inches below the limb**, allowing for wind movement and preventing wire abrasion.

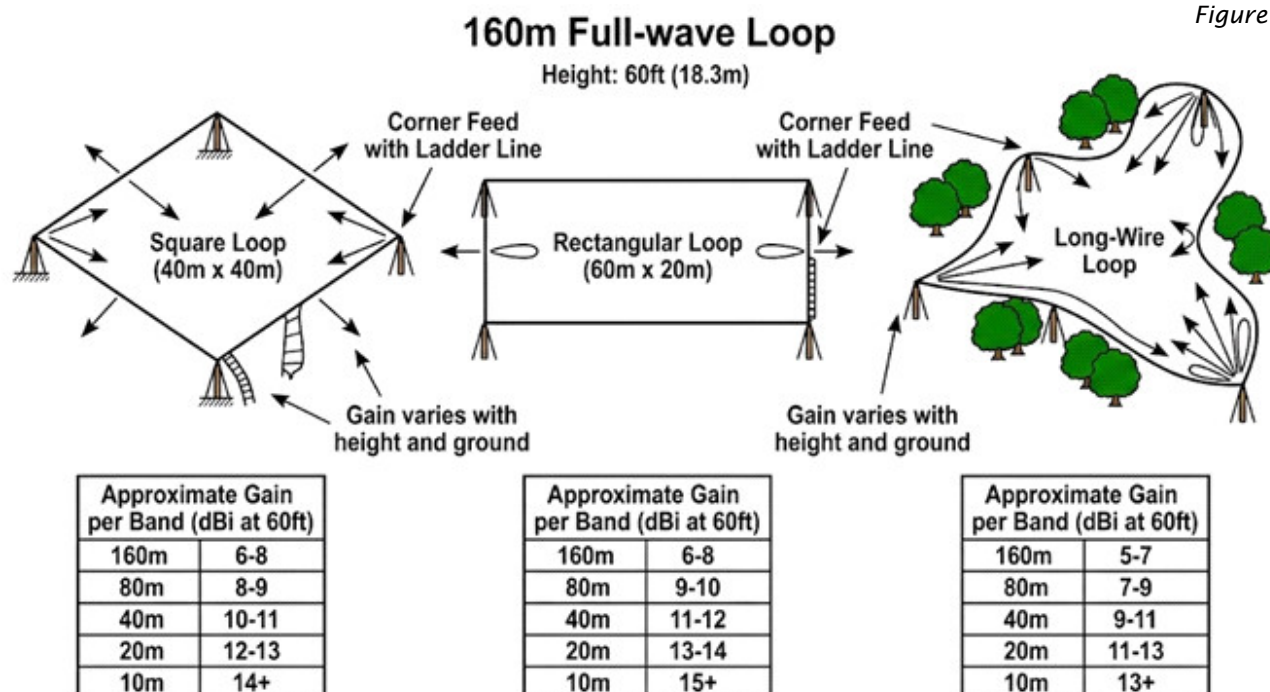
Performance by Band

The antenna height varied by section and remained below 1/4 wavelength on 160 meters, resulting in primarily high-angle radiation at lower frequencies.

Observed Performance Summary (see figure 1)

Band	Performance Characteristics
160 m	Strong NVIS, reliable to ~600 miles, some DX
80 m	Very strong regional signals, occasional DX
40 m	Excellent performance, noticeable directivity
20 m	Increasing gain, narrowing lobes
15–10 m	Strong lobes, significant directionality

Figure 1



On higher bands, lobe formation became more pronounced. In some directions, the loop equaled or exceeded the performance of a directional beam. In other directions, the beam clearly dominated. This behavior is expected as loop electrical length increases. Always remember gain is not free if you get gain in one direction you lose it in another. Also, if you lower some sections of this loop expect some interesting lobes.

Noise Performance

One of the most significant advantages observed was **low noise pickup**. The horizontally polarized loop consistently measured several dB quieter than vertically polarized antennas.

In practice, this meant:

- Signals often read lower on the S-meter
- Copy was easier due to reduced noise
- Weak signals were more intelligible than stronger but noisier ones

This made the antenna especially effective during poor band conditions.

Balun and Matching Experiments

Over several years of operation, the following configurations were tested:

Configuration	Result
Balanced tuner, no balun	Excellent
4:1 current balun	Easier tuning
1:1 current balun	No change in signal

The choice of balun had little effect on radiated performance. The antenna itself dominated system behavior.

Lessons Learned

Several practical lessons emerged from long-term use:

- Trees move—leave slack in the wire
- Do not pull the loop tight against limbs
- Expect seasonal changes in height and tension
- Mechanical reliability matters more than perfect symmetry

Wind loading and branch movement will stretch or break a tightly installed loop. Allowing controlled movement greatly increases longevity.

Formulas

The total length of a full-wave loop antenna is calculated using the following standard formulas.

Length in Feet: $L (\text{ft}) = 1005 / f (\text{MHz})$

Length in Meters: $L (\text{m}) = 306.3 / f (\text{MHz})$

For a design frequency of **1.9 MHz** (in the 160-meter band):

$L (\text{ft}) = 1005 / 1.9 \approx 529$ feet

$L (\text{m}) = 306.3 / 1.9 \approx 161.2$ meters A total length of 160 meters is a great practical choice that will be easily tuneable across all bands.

If you have the room, build one. You will not be disappointed.

Conclusion

The horizontal loop proved to be one of the most effective and versatile HF antennas used at this station. Its combination of multiband capability, low noise, mechanical simplicity, and consistent performance made it a reliable daily antenna.

If adequate space and natural supports are available, a horizontal loop is strongly recommended. With modest materials and careful installation, it delivers performance that rivals far more complex systems. I do wish I had all those trees at this new QTH as I would put up another one. This property had 0 trees when we bought it.

Any questions or comments? n0xoalan@gmail.com

73,

~ Alan N0XO



A Special Interest Group for the iCOM 7300, 7610, 9700 and other compatible models

Hidden features in the Icom IC-7300 transceiver:

Discovering the radio's secret superpowers

by JOHN SCHOUTEN VE7TI



**John Schouten
VE7TI**

Has both an iCOM 7300 and 9700 and is fascinated by the many features of these transceivers.

I've been documenting the iCOM IC-7300's many features over several issues. I thought that it might be useful to provide an overview of some of what we've covered to date and a few other features that you may not be aware of.

The IC-7300 is one of the most popular HF/6-meter transceivers ever made, and for good reason. Its direct-sampling SDR architecture delivers clean receive performance, a useful real-time spectrum scope, built-in antenna tuner, and USB audio—all in a compact, affordable package. But even after years of ownership, many hams, myself included, are still discovering "hidden" features that aren't obvious from the quick-start guide or front-panel buttons.

These lesser-known capabilities—some buried in menus, others unlocked via firmware or clever workarounds—can transform how you operate, especially in contests, portable work, or tough band conditions. While the full manual (available on iCOM's site) covers most basics, the real gems often require digging deeper into the SET menu, firmware updates, or community-shared tricks. Here's a deep dive into some of the best hidden features, with step-by-step activation instructions and practical tips to get the most from your IC-7300.

1. **Emergency Tuner Mode:** Tame high-SWR antennas in a pinch. The IC-7300's built-in tuner is rated for up to 3:1 SWR under normal

operation, but there's a secret "Emergency" mode that expands this dramatically—to around 10:1—perfect for random wires, compromised portable antennas, or emergency setups.

How to enable it: Press MENU → SET (the wrench icon) → Scroll to the "Others" tab (usually the last one) → Select "Emergency" → "Expand matching ratio for emergencies." Touch "Restart to Set." The radio will reboot into Emergency mode.

You'll see an "E-TUN" indicator when active. The trade-off? Transmit power is automatically limited to 50 watts to protect the finals. Many users report successfully tuning 8:1+ mismatches on multiple bands with this mode engaged.

Always keep clear of the antenna during transmit, and restart the radio to exit the mode.

This feature has saved many Field Day and POTA activations when the antenna didn't cooperate.

2. **Microphone UP/DOWN Buttons as Memory Triggers and CW Keyer:** One of the slickest contesting hacks. Your stock HM-219 (or compatible) microphone's UP and DOWN buttons can trigger voice, CW, or RTTY memory messages hands-free—no need to reach for the screen.

Activation: For memory playback (Voice/CW/RTTY). Go to MENU → SET → Function (or Voice TX Memory settings) and enable "MIC Up/Down Keyer" or the specific memory assignment option (firmware 1.40+ enhanced this).

For CW specifically: In CW mode, the same setting turns UP/DOWN into a paddle (one for dots, one for dashes) or memory triggers.

This is a game-changer for CQing from a lawn chair during POTA/SOTA or running pileups. Program your CQ, "599 TU," or contest exchanges into the memories (up to 8 voice/CW slots, stored on the SD card), and fire them off with a thumb press. Firmware updates made this even smoother—check for v1.40 or later.

3. **RF Gain Magic:** Clean Up the Scope and Pull Weak Signals. Many owners run the RF gain at maximum and wonder why the scope looks noisy or signals get buried. The secret

is dialing it down. The technique (often called a "dB heaven" variant): Reduce RF gain until the spectrum scope background turns mostly black with distinct white signal spikes (instead of a solid blue wash)

Compensate by increasing AF gain for comfortable volume.

Add Preamp 1 (below 20m) or Preamp 2 (20m+) if needed, then back off RF gain again.

This dramatically improves dynamic range and makes weak signals pop. Combine it with Noise Blanker (NB), Noise Reduction (NR), and manual Notch for killer weak-signal performance on 40m or 80m at night.

The scope becomes a precision tool rather than a colorful distraction.

4. **Spectrum Scope and Waterfall Mastery:** The IC-7300's 4.3-inch touch display is legendary, but few maximize its customization:

Span and centering: Touch the scope and drag to zoom. Use Center mode (fixed frequency line) for pileups or Fix mode (scope moves with VFO) for band scanning.

Waterfall tweaks: MENU → SCOPE → Adjust speed (faster for digital), contrast, and color palette. Max Hold highlights persistent signals.

Touch zoom: Tap a signal on the scope to center and narrow the view instantly.

During TX: Enable scope on transmit to monitor your signal or splatter.

Advanced users create custom color schemes for different bands or conditions—dark themes for nighttime to reduce eye strain.

5. **Stacked VFOs via Band Buttons:** Press the same band button repeatedly to cycle through "stacked" VFO memories with pre-set modes and filters. For example, on 20m it might jump from SSB (wide filter) → CW (narrow) → DATA (USB with specific settings). This is fantastic for multi-mode operators—no more manual VFO tweaking when jumping between phone, CW, and FT8.

6. **SD Card Superpowers:** Recording, Screenshots, and Backups. The front-panel SD slot is more than storage.

RX Recording: Long-press the REC button to capture entire QSOs (TX audio included with voice memories).

Screenshots: Hold the POWER button briefly (or assign via menu) to capture the display—great for sharing scope views of rare DX.

Voice Keyer Files: Store and edit professional-sounding messages on your PC, then load them back.

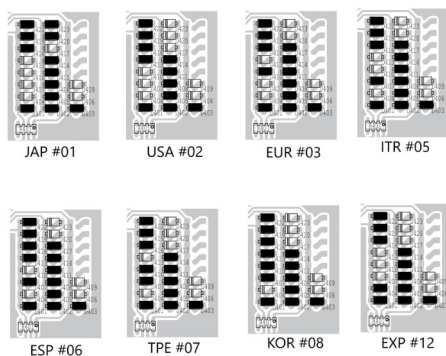
Settings Backup: Save your entire configuration before firmware updates or experiments.

Always use a quality card (up to 32GB) and format it in the radio.

7. **Diode Matrix Mods:** Unlocking "Undocumented" Versions (Advanced Users Only). For tinkerers, the main board has a diode matrix that iCOM uses to configure regional versions (US, EU, Japanese).

Removing or adding specific surface-mount diodes can: Enable full transmit from 0.03–74.8 MHz (MARS/CAP).

Unlock 60m channels or change default language.



<https://harbeck.dk/ham-radio-oz2xh/icom-ic-7300-mods/icom-ic-7300-open-tx/>

Potentially access other "personality" tweaks.

This requires opening the radio, precise soldering, and acceptance of risk (warranty void, potential bricking). Service manuals show the

diode locations—search for "IC-7300 diode matrix" for diagrams. This is NOT for beginners, but it turns one radio into multiple "models".

8. **Digital Mode and USB Tricks:** DATA Mode Settings: MENU → SET → Connectors → DATA OFF MOD (set to MIC or MIC+ACC), DATA MOD to USB, and adjust levels to avoid distortion in FT8/JS8Call.

Built-in RTTY Decoder: Displays decoded text on-screen—pair with an external keyboard via the mic connector for a mini terminal.

USB Audio: The radio appears as a sound card—no extra interface needed for digital modes.

Firmware updates (check iCOM's site regularly) have added scope improvements, more menu options, and stability fixes and many "hidden" features that emerged post-launch.

Other Gems Worth Mentioning: IP+ Function: Boosts IP3 for strong-signal environments (FUNCTION menu).

External Keypad: Build or buy a simple circuit to trigger memories from a keypad plugged into the mic jack.

Explore, Experiment, and Enjoy

The IC-7300 rewards curiosity. What seems like a straightforward rig reveals layers of sophistication the more you dig. Start with the full manual's SET menu section, update your firmware, and join communities on QRZ, Reddit's r/amateurradio, or YouTube channels dedicated to 7300 tips.

Before experimenting always back up your settings to the SD card first, that way you always have a way back. Whether you're chasing DX, activating parks, or just ragchewing, these hidden features make the IC-7300 feel like a premium radio that keeps on giving. Fire up that menu, try the emergency tuner on your next portable outing, and watch the scope come alive with proper RF gain.

Your IC-7300 has been hiding superpowers—it's time to set them free.

~ John VE7TI

ADIF 2 Cabrillo Converter

The ADIF to Cabrillo Converter is a JavaScript-based web service specifically designed for amateur radio operators. This utility facilitates the conversion of ADIF (Amateur Data Interchange Format) logs into Cabrillo format, which is commonly used for submitting entries in amateur radio contests. By automating the often tedious process of formatting logs, the service ensures that submissions comply with specific contest requirements.

The converter accepts ADIF logs by dragging and dropping the file directly on the screen or by cutting and pasting the ADIF text as input to produce Cabrillo-formatted logs as output. It accurately identifies essential fields from ADIF logs and maps them to the required fields in Cabrillo format, such as frequency, mode, and date. Users can also define specific settings to determine how data should be extracted and organized, allowing for customization of header fields to meet varied contest specifications. This feature is particularly beneficial for operators participating in different contests, as each may have unique requirements.

In terms of functionality, the converter includes provisions for error management, alerting users if there is a risk of losing important data during the conversion process. If certain unsupported fields are detected, appropriate warnings are generated, further enhancing the tool's reliability. Comprehensive documentation accompanies the converter, detailing its usage, caveats, and command-line options relevant to various contest entries.

The ADIF to Cabrillo Converter offers significant

advantages for amateur radio operators. Firstly, it saves time by automating the conversion process, allowing operators to redirect focus towards operational activities or contest preparations. Additionally, by reducing the likelihood of human error during log formatting, the converter enhances the reliability of contest submissions. The tool also ensures that entries are well-structured according to Cabrillo specifications, which is critical for timely and accurate contest participation.

Moreover, the converter is designed to be intuitive, making it accessible even for operators who may not possess extensive programming knowledge. This user-friendly interface broadens its appeal and usability among the amateur radio community.

In conclusion, the ADIF to Cabrillo Converter is an invaluable tool for amateur radio enthusiasts who frequently engage in contests. By simplifying the conversion process, it addresses a complex task that is essential for accurate contest participation. The combination of automation, error reduction, and customization not only enhances efficiency but also significantly improves submission accuracy, enabling operators to maintain good standing in the competitive amateur radio landscape.

<https://github.com/OH6BG/OH6BG-JavaScript-ADIF-to-Cabrillo-Converter/>



Activating LZ9X Bulgaria

During the IARU Contest - October 2025

by Dino Gueorguiev VE7NX VE7XDT LZ8DT ex LZ2DT

After the success of building 10 GHz and 24 GHz terrestrial systems and beacons in our Surrey club, I decided to promote 10 GHz activity in my native country of Bulgaria. I purchased the parts needed to build the W1GHZ 10 GHz transverter, a 2 W amplifier with a bias PCB, a feed for the 2 ft antenna, and the W1GHZ preamp. I assembled and tested everything at home as a complete system. Once satisfied, I packed all the equipment in my luggage and flew to Europe.

In Bulgaria, I met with old friends, and with their help we installed all the electronics into a custom-made enclosure, mounted everything on a heavy tripod, and secured the 2 ft dish. Since we had no test equipment available, we had to rely entirely on the tests I had performed back in Canada. We selected a mountain-top location at 4,500 ft ASL as our contest site, using an abandoned small building that provided shelter and power. We set up all antenna arrays with rotor control in pouring rain.

On the first day of the contest, October 4, the heavy rain prevented us from attempting 10 GHz contacts. The LZ9X contest group has been very successful over the years, but had never made a 10 GHz contract. On the next day, October 5, we woke up to clear skies and freezing temperatures around 0°C. At 8:30 AM we began our attempt to

contact the two stations in Romania—YO7BM and YO7CW—located 248 km away. After setting the azimuth, we established contact, and after fine-tuning, the signals were 59+. We completed both QSOs and then switched to 5.7 GHz, another new band for the LZ9X group, and successfully made those contacts as well. We were very happy to complete the 10 GHz contacts, as to our knowledge we are the only Bulgarian station to have done so.

We also attempted to contact another 10 GHz station in Russia, but Alex in Crimea had heavy rain and was unable to set up. The distance to



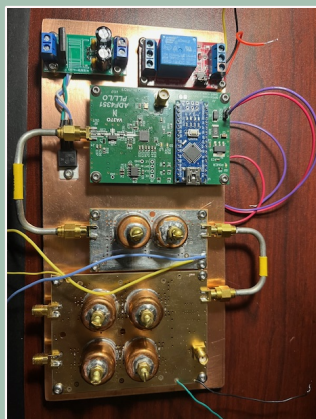
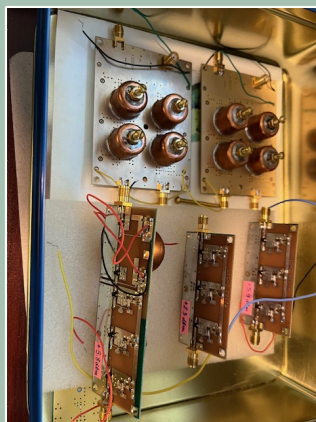
his location was 700 km. For context, a few months prior to the contest, Turkey made the first-ever 10 GHz contact with Alex in Crimea, covering a distance of about 350 km over the Black Sea.

Looking ahead, there is an IARU contest in July that I plan to attend again from the same location in Bulgaria, and I hope to activate 24 GHz as well. I have also built a 10 GHz beacon that I plan to install this year—the first 10 GHz beacon in the region. After last year's successful contacts, several more hams in Bulgaria are now building their own 10 GHz systems, so we may soon see more activity on the band.

...To be continued.

73,

~ Dino VE7NX / VE7XDT/ LZ8DT/ ex LZ2DT





High Above the Noise: What's New in Amateur Satellite Radio

For decades, the "final frontier" was reserved for national agencies with billion-dollar budgets. AMSAT and early pioneers in amateur radio satellites changed all that. These days, if you happened to be wandering through a park and saw someone holding a directional antenna toward a seemingly empty patch of sky while talking into a handheld radio, you weren't witnessing a scene from a 1950's sci-fi flick. You were seeing the amateurs in action experiencing the world of amateur radio satellites.

The period between December 2025 and February 2026 has proven that this hobby isn't just alive; it's accelerating. From Southeast Asian educational triumphs to a resurgence in hardware innovation, the past 60 days have provided a boost to the "ham" community's presence in Low Earth Orbit (LEO).

KNACKSAT-2 Reaches Orbit

The winter season kicked off with a major win for international cooperation and STEM education. In late 2025, KNACKSAT-2, a 3U CubeSat

developed by King Mongkut's University of Technology North Bangkok (KMUTNB) in Thailand, was successfully deployed from the International Space Station (ISS).

[KNACKSAT-2](#) supports amateur radio operations through an APRS digipeater payload developed in cooperation with the Radio Amateur Society of Thailand. The amateur payload operates using coordinated frequencies through the International Amateur Radio Union (IARU) satellite frequency coordination process. The APRS digipeater system uses 145.825 MHz for uplink and downlink using FSK modulation at 9600 bps with AX.25 framing. The amateur satellite callsign assigned to the mission is HSØK.

This isn't just a win for Thailand's burgeoning space program; it's a gift to the global amateur community. Now fully operational,



the satellite is broadcasting telemetry signals that can be picked up by enthusiasts worldwide. For students, it serves as a "floating laboratory," but for hams, it represents another reliable beacon in the sky. Its successful deployment underscores a growing trend: the democratization of space through the CubeSat standard, allowing universities to bridge the gap between classroom theory and orbital reality.

The AMSAT Roadmap: GOLF and FoxPlus

While KNACKSAT-2 settled into its new home, the eyes of the North American community were fixed on HamCation in Orlando. AMSAT (the Radio Amateur Satellite Corporation) used the platform to deliver high-stakes updates on the projects that will define the next five years of amateur space flight.

The buzz centered on the GOLF-TEE (Great Orbit, Larger Footprint - Test Environments Engineered) and the first two FoxPlus satellites. AMSAT officials confirmed that these builds are on track for completion by the end of 2026.

Why this matters: The FoxPlus series is designed to follow in the footsteps of the legendary "Fox" satellites, providing easy-to-access FM transponders that allow beginners to make contacts using simple gear.

Furthermore, the "PocketQube" revolution is gaining steam. A coordination request was officially submitted for UNNE-1B (HADES-E2). Despite its diminutive size—literally fitting in the palm of your hand—this tiny satellite is slated to carry a full FM voice repeater, proving that in the world of orbital mechanics, size isn't everything.

The "Game Changer" in Your Pocket

You can have all the satellites in the world, but they're useless without the right "ground station." Historically, the biggest barrier to entry for satellite work has been

the hardware. To talk to a satellite effectively, you ideally need full-duplex capability—the ability to hear your own signal coming back from space while you are still transmitting.

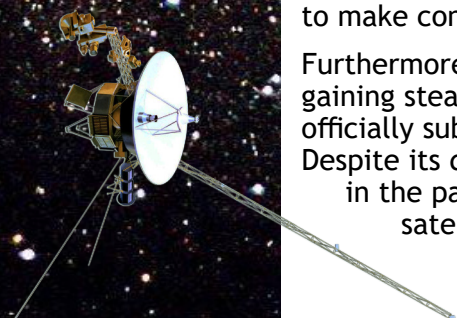
The Anytone AT-D890UV (also hitting shelves as the BridgeCom Maverick and the BTECH DA-7X2) was released just this winter and makes some impressive claims with features such as full 'true' duplex which allows the user to monitor the "downlink" in real-time to ensure you aren't "kerchunking" the bird. It features easily set VHF/UHF cross-band for birds like SO-50 or AO-91 and a large color screen that is said to make tracking frequencies and offsets (to account for Doppler shift) much easier in the field.

For years, hams had to hunt for dual-band radios or carry two separate handhelds lashed together with a specialized cable. The arrival of another modern, affordable, all-in-one handheld that handles full-duplex with ease is always welcome in the hobby. It lowers the barrier to entry significantly, making it possible for a newcomer to "work the birds" with a single radio and a steady hand.

Looking Way Up

The amateur satellite community is not just a niche corner of radio. It is a sophisticated, global network of educators, engineers, and hobbyists.

You don't need much to get started and you can work the ISS with an inexpensive dual band portable. Whether it's a student in Bangkok tracking their university's CubeSat or a technician in Ohio using their new Anytone to bounce a signal off a satellite moving at 17,000 miles per hour, the sky has never felt more accessible.





Charlie and the Field Day Chicken

by Alan J. Wilson N0XO



Alan J, Wilson N0XO has been a ham since 1977. In the first decade he was a spotter for the National Weather Service reporting and helping in several tornadic events in the southeast United States.

I first met Charles Thornton—better known as Charlie—at the 2021 ARRL Field Day in Salmon, Idaho. But calling it a "Field Day" was generous; it was more like a sad little joke of an event, with one lonely antenna wrapped around a tree trunk like a half-hearted hug, and just a handful of people showing up—barely enough to form a quorum, let alone a radio revolution. I'd just relocated from a hardcore group up in Montana, where we treated Field Day like a military campaign: 24 hours of non-stop action, with two operators hammering away on CW like caffeinated woodpeckers on steroids. Eager to dip my toes into the new scene without diving headfirst, I figured I'd let the so-called local group handle the planning and setup, while I played backup singer—showing up for support duty and maybe sneaking in a few contacts on the side.

But oh boy, was I in for a surprise that hit harder than a sudden band blackout.

In swaggered this guy with a confident strut and a drawl thicker than molasses in January—he'd been a ham years ago but had let his license lapse, probably during some epic bout of "life getting in the way." The sparse crowd that bothered to appear was more interested in jawing about local gossip and swapping stories about the area's drama from the past few months than making contacts. It was like a high school reunion where the radios were just awkward props, gathering dust while everyone reminisced about who stole whose frequency back in '98. Meanwhile, I was over here solo operating like a one-man band at a funeral: logging contacts, chatting up stations, all without even a headset to muffle the chaos.

Then Charlie stepped up to the mic. He was rusty as an old barn nail left out in the rain, but unlike so many Field Day newbies who treat the microphone like it's a live grenade primed to explode in their face, he grabbed it with gusto, like he was about to serenade the ionosphere. I

switched to handling the computer logging—since I knew the app inside out, upside down, and in binary—and we started knocking down contacts at a decent clip, like a well-oiled comedy duo from some forgotten vaudeville act. Alas, the battery that was "guaranteed" to last all night and recharge on solar (spoiler alert: it was a filthy liar, probably designed by the same folks who promise "unlimited data" on cell plans) conked out by late afternoon, turning our grand operation into a pumpkin faster than Cinderella's coach. Field Day over, just like that—poof! Charlie, undeterred and with the energy of a man half his age, hightailed it to another ham's shack and racked up a hundred more contacts, probably while sipping sweet tea and regaling them with tales of his glory days. Disgusted and muttering like an old-timer yelling at clouds (or in my case, unreliable tech), I slunk home and worked a pile from my own rig, grumbling about batteries that betray you worse than a flaky repeater.

Charlie didn't even have a legal call sign yet, thanks to the local VEC's epic bungle, they forgot to file or sign something crucial, turning the whole process into a bureaucratic comedy of errors. He battled the sponsoring group tooth and nail, even called the FCC, who confirmed he'd aced his tests, but the ball had been dropped harder than a mic at a bad karaoke night (complete with off-key feedback). This fiasco dragged on for nearly a year, testing his patience like a weak signal through QRM, until he finally snagged his call: N7CRT. Charlie had a tower lying on the ground, gathering dust and probably serving as a perch for local birds, and with his Stage 4 colon cancer sapping his strength like a vampire at a blood bank, he couldn't do much about it. Like me, he showed up to the group's gatherings—such as they were—and tried to nudge them back into being a proper club, one with actual activities beyond coffee and complaints. But the guy running the show was basically a dictator in ham radio shorts, ruling with an iron fist wrapped in coaxial cable, and the new hams didn't know any better; they thought this was normal, like putting pineapple on pizza or using AM on a crowded band. During a bout of COVID that left me crankier than a bear with a thorn in its paw (and a sinus infection to boot), I finally lost my cool with the constant interruptions on the 2-meter

net—chatter overlapping like bad pileups—and barked, "I'm done—take me off the roster!" like a dramatic exit from a soap opera. Charlie followed suit a few weeks later, resigning with his signature southern flair, probably tipping an imaginary hat as he signed off with a theatrical "73 and out."

Charlie had always yammered on about doing a Parks On The Air (POTA) activation, especially since his tower was still playing dead like a lazy actor in a bad play. So, in early spring, when the snow on Lost Trail Pass was deeper than a politician's excuses and thicker than my winter beard, we packed up and headed out. There's a ski resort up there that graciously lets us park one of our repeaters, so we commandeered a semi-heated back room like radio bandits on a heist. I waded through the drifts like a polar explorer on a budget, nearly losing a boot in the process (and cursing the snow gods for good measure), to string up one end of the antenna. With an Icom 7300 humming away like a contented beehive, Charlie kicked things off with the first contact, then handed the mic to Ray or me like we were tag-team wrestlers. We'd circle back, giving the other station our trio of call signs and explaining our bizarre setup: antenna in Idaho, radio in Montana, smack in the middle of Salmon National Forest and Bitterroot National Forest. It was like operating from a state-line limbo, where even the squirrels couldn't decide which jurisdiction they were in. Between Charlie's Texas-meets-Tennessee twang (think slow-roasted barbecue with a side of y'all), my Alabama hillbilly drawl (complete with banjos and sweet tea vibes), and Ray's straight-laced Idaho lilt (as crisp as a potato chip), we lured in stations like flies to honey—or perhaps more accurately, like moths to a flame-lit QSL card. We didn't want to hog the fun like greedy bandwidth hogs, so we stood back and let Charlie run wild—he was having a ball, grinning like a kid in a candy store who'd just discovered free samples. We ended up with 36 contacts, and I swear the accents alone added 10 dB to our signal, turning weak whispers into booming broadcasts.

That same year, Charlie and Ray spearheaded what was probably the one and only Whitewater Hamfest in Salmon, Idaho—a town so isolated in Lemhi County that it's three hours north or south to the nearest Walmart, making it feel like the



edge of civilization (or at least the edge of reliable cell service). We rented the Whitewater Arena, transforming it into a ham radio wonderland with retail vendors hawking gear like carnival barkers, a testing session where 13 brave souls passed (and probably celebrated with high-fives, static bursts, and maybe a group "CQ!"), and a flea market where I offloaded a mountain of my radio junk faster than you can say "QSL confirmed." Hams rolled in from several states and even Canada, turning it into a cross-border party that felt like Woodstock for wire enthusiasts. We all had a blast, swapping tall tales and tech tips over questionable coffee, and we almost broke even—close enough for ham work, where "good enough" is often the motto! By late April, Ray, Charlie, and I decided to rebel against the dictatorship once more for Field Day, like radio revolutionaries plotting a coup. Ray was often off on church business, playing holy globetrotter and spreading the good word worldwide, so Charlie and I took the reins. We set up in an RV park in Leadore, Idaho—still Lemhi County, with a population boasting one store, one cafe (which has since folded like a bad antenna in the wind, probably due to lack of customers or too much competition from tumbleweeds). By then, Charlie's kidneys had thrown in the towel, likely from the chemo cocktail, so he was bunking five nights a week in a travel trailer in Idaho Falls for dialysis—talk about a mobile shack with a medical twist. Yet, with all his ailments piling up like bad QRM on a noisy band, he kept a surprisingly sunny attitude, cracking jokes that could light up a dark frequency and leave you chuckling through the static.

We strung a G5RV between two trees on Friday, right after a rain-and-lightning tantrum subsided (Mother Nature's way of saying "test your grounding first"), and I made a couple of test contacts to confirm it wasn't just decorative string art. I crashed in the back of my pickup that night—yes, with a camper shell, turning it into a luxurious tin can on wheels, complete with the aroma of yesterday's sandwiches. Saturday dawned early and crisp, so we hit the lone cafe for a hearty breakfast (think Laurel and Hardy portions: eggs, bacon, hash browns, and enough coffee to fuel a moon launch or at least a decent DX chase). We were running 1A off a Honda generator with battery backup, sticking to SSB since the others had zero experience with FT-8 or CW—they'd probably think it was Morse code for "help, I'm being held hostage by dots and dashes." Pickings were slim at first; I scratched out about 70 contacts, feeling like I was pulling teeth from a reluctant sunspot.

Then Charlie's wife showed up with... a live chicken in a pet carrier? Not cooked, mind you—this feathered diva was clucking complaints louder than a faulty amplifier and stinking up the trailer like a barnyard blooper reel gone wrong. She claimed it wasn't adjusting to the other chickens, as if we were running a poultry therapy session mid-Field Day instead of chasing QSOs. The odor hit like a skunk at a perfume party, and it was vocal enough to QRM our signals—I'm pretty sure a few distant stations heard "cluck cluck" instead of "CQ." A couple other hams wandered in, turning things into a bull session worthy of a podcast, but no one else wanted to operate or fiddle with the logging computer—they treated it like it might bite or, worse, require reading the manual. Finally, the chicken parade departed (odor lingering like a bad memory or a persistent echo), and the visitors cleared out. I handed the mic to Charlie, and he took off like a rocket on SSB, hammering contacts with that old-school enthusiasm that could melt through propagation walls. He'd been a ham back in the day but let his ticket expire; only after getting sick did he dive back in, chasing signals like they were the cure to boredom. I happily logged away, thrilled to see him lit up like a Christmas tree antenna in full glow. He powered through till noon, with 10 and 15 meters sizzling hot like fresh popcorn. I remember quipping, "Wait till next year—we'll

crush it like a Yagi on steroids! “Little did I know this was Charlie’s first and last big hurrah, and I’m eternally glad he went out with such joy, laughing in the face of adversity.

Later that summer, Charlie scored a home dialysis unit, freeing him from the trailer life like a prisoner granted parole. A bunch of us hams rallied ‘round, hoisting his tower skyward like a community barn-raising (with more coax and fewer quilts), running lines, and rigging a G5RV so he could chat on HF right from his dialysis chair—like a throne for a radio king, complete with royal static. But soon after, Charlie started fading from Ray and me, pulling away like a weak signal lost in the noise. Then word came he’d suffered a massive stroke and was back in the hospital in Idaho Falls. After battling Stage 4 colon cancer and failed kidneys like a warrior in a bad propagation storm—dodging interference at every turn—he had to leave us. His tower still stands in the backyard, a silent monument to a great ham friend, though knowing Charlie, he’d probably joke it’s just waiting for the next band opening or perhaps serving as a perch for angelic DX stations. We miss his southern humor, that tough-guy swagger that could outlast any solar flare, and we swap stories about him often, chuckling over the accents, antics, and that



unforgettable chicken cameo. God bless you, Charlie—you endured a heap of pain here on earth, but now you’re free of it, probably with perfect S9 signals all around. I hope you’re working some exotic DX up there, maybe on a golden band with infinite bandwidth and no QRM. 73 from N7CRT. SK SK.

~ Alan NØXO

Amelia Earhart Article Update

The following is from a friend of mine, Andrew McKenna, in Colorado. Andrew has researched Amelia’s flight for many years and in 2024 visited with a National Geographic Society team the location where she and Fred Noonan were thought to be lost. Andrew writes:

It is an interesting article, although I think we could add some information. My understanding, not comprehensive, is as follows:

The trailing wire antenna was removed before the Round the World flight to save weight, removing the capacity to transmit or receive on 500kc. The remaining 3 antennae were - The DF [Direction Finding] Loop on top of the fuselage, a dorsal V antenna on top of the aircraft used for transmitting, and a belly antenna that was her receive antenna.

As Earhart approached Howland, the USCG Cutter Itasca could hear her with increasing clarity and strength, but it became evident that she could not hear them, except when she tried to use the DF loop on their transmissions. Unfortunately, her DF system

was not set up for the higher frequencies that were in use and she was unable to get a good bearing.

There is an anecdote from Lae that they found her receiver antenna on the runway after her departure, and that is supported by video of the take-off where an anomalous puff of dust comes up at one point in her take off roll. The lack of her ability to hear the Itasca also supports the idea that her receive antenna was torn off upon take off. Ric Gillespie of TIGHAR [The International Group for Historic Aircraft Recovery] could elaborate further I’m sure, so maybe I’ll ask him to comment.

Thanks for the fascinating [SARC Communicator article](#).

Best Regards,

~ Michael Derr W3DIF, Boulder Amateur Radio Club,
Boulder, Colorado

Andrew McKenna, President, Journeys Aviation, Boulder
Municipal Airport, Boulder, CO.

The IPS Buffet Antenna:

A Mix-and-Match Field Review

by JOHN LEONARDELLI VE3IPS

Sometimes the best antenna isn't something you buy in a single box—it's a "buffet" of the best components you can find, mixed to perfection. I call this setup the IPS Buffet Antenna. It's a Frankenstein build that takes the strongest parts from different manufacturers to create a portable vertical that actually withstands the real world.

The premise was to see if efficiency can be improved by installing the Gabil slider at mid point and also if a mobile scenario can be had.

Here is the breakdown of the ingredients I'm currently serving up in the field:

1. The Foundation: Chelegance JMount-336 & REZ Scout Base

Stability is everything. I'm using the Chelegance JMount-336 Triple Magnet Mount. Its overkill for a portable vertical, which is exactly why I like it because it doesn't move. It has 3 magnetic bases for a super strong hold (can be a bit tough to remove). Also there are various antenna mounts to be used. I have the SO-239 with coax of course but I needed a 3/8-24 thread.

On top of that, I've mounted the REZ Antenna Scout base. This thing is a tank. It's machined beautifully and provides a rock-solid mechanical connection. It's the heavy-duty anchor that this system deserves. I use this for verticals and linked dipoles and the center feed for my 10m Yagi I made.

2. The Radiator: Gabil GRA-7350TC & GRA-M105 Whip

For the radiating element, I'm sticking with the Gabil GRA-7350TC coil. Its compact, covers 40m-10m easily, and fits the form factor. It packs up for easy transport in a pocket.

But the real upgrade here is the GRA-M105 Stainless Steel Whip. As I've mentioned before, I swapped out the standard telescopic whip for this "tent pole" style shock-corded whip. It threads directly into the coil (M10 thread) and eliminates the fear of snapping a flimsy element in the wind. It's rugged, reliable, and fast to deploy. It's a variation of the AT-271 and about 7.5 feet long.



3. The Plumbing: RG-316 Coax & Homemade Choke.

You can't ignore the feedline. I use RG-316 coax because it's incredibly thin, lightweight, and easy to pack. It handles the 10-100 watts I run without bulk.

Crucially, I've added a Homemade Choke at the feed point. As we know, vertical antennas love to use the coax shield as a counterpoise if you let them. My custom choke stops that RF from coming back into the shack (or my hand), ensuring the energy goes out the airwaves where it belongs. Mandatory.

4. The Glue: Chelegance & Gabil Thread Adapters.

The unsung heroes of this build. Because I'm mixing US standard (3/8-24) and Metric (M10) parts, a kit of Chelegance and Gabil thread adapters is mandatory. They ensure the REZ base (3/8-24) talks to the Gabil coil (which needs an adapter) and that everything seats firmly.

The Verdict

Field Tested and Approved by VE3IPS...

20m sucked and was noisy but I found a SOTA summit activator and another park activator N4BEL activated SOTA W4C/EM-066 and NC4XL was at US-4852. Both were 5-8 and I got 5-7s running 10 watts with the FX-4CR. I was very happy to have propagation into NC for my tests. I was stuck on 20m inside my car with the freezing rain and I couldn't bust through any pileups with my QRP.

Another fun day taking the antenna test lab out to the park.

The IPS Buffet Antenna works because it ignores brand loyalty in favor of performance. It combines the heavy-duty mounting of REZ and Chelegance with the compact efficiency of Gabil. It's rugged, it packs down small, and it gets out.

My 20m tests were rewarding and proves a 9 ft antenna is just as good as a 17 foot whip.

Cheers,

~ John VE3IPS
ve3ips@gmail.com

BTW: I did deploy the whip from my Chelegance MC-750 and that was a nice radiator. No problems activating on 20m and 10m. Remember: DANGER - POWERLINES - DANGER

OPERATORS WANTED
for 2026 DXpeditions & Contest Teams

 WPX SSB: Montserrat
March 28-29, 2026

 IOTA Tangier Island:
July 21-26, 2026

 Fall NAQP: Washington D.C.
August 15-16, 2026

 Ghana DXpedition
coming in 2027!

 Ghana DXpedition coming in 2027!

Information:

<https://www.hamradioworld.org/post/operators-wanted-for-2026-dxpeditions-contest-teams>

Add Digital Television

to Your ARES Tool Kit

by JIM ANDREWS KH6HTV



Jim Andrews, KH6HTV
publishes the free ATV
Journal via email. All past
issues are archived at:
[https://kh6htv.com/
newsletter/](https://kh6htv.com/newsletter/)

This is a TV success story for a local ARES group. The Boulder County, Colorado ARES group, BCARES, has experienced a lot of success working with our county's emergency service organizations, in particular, fire and law enforcement. BCARES's tool kit includes all of the ordinary ham services, including HF/VHF/UHF voice communications, repeaters and various digital modes on HF/VHF/UHF. PLUS high-definition (1080P) digital Television.

What Boulder County Public Safety lacked most and BCARES had to offer was--- TELEVISION. Ham television is the one BCARES capability that really excites our served public safety agencies. BCARES started offering analog TV services [1] about 35 years ago, when I was the chairman (E.C.) of BCARES. We added TV at the encouragement of Captain Bill McCaa, K0RZ of the

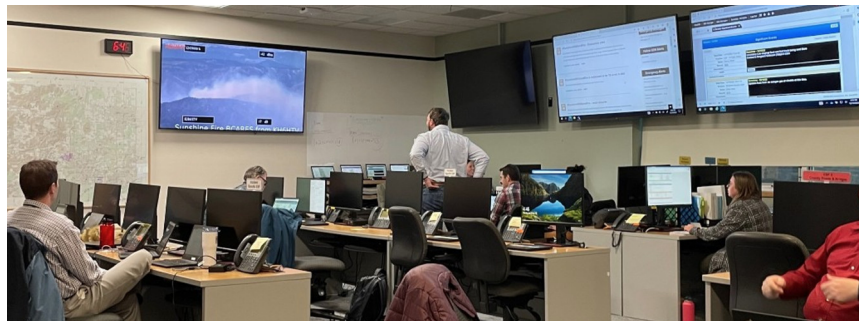


Fig. 1 (left) Officials in Boulder EOC watching BCARES TV coverage of a forest fire.



(right) BCARES video of an air drop of slurry on a forest fire.

Boulder County Sheriff's Office. Bill was in charge of all of the Sheriff's communications and computer operations and the county regional 911 center. Over the past years BCARES has received many more requests for assistance using TV than for all other communication modes.

TV offers "Public Safety" information in ways never imagined by us nor our served agencies. Television has come to be appreciated by our served public safety agencies because it provides what they refer to as "situational awareness". It helps remove the need for many voice communication exchanges for information that is already contained in the video imagery. Television allows the incident commander at the Incident Command Post (ICP) to actually see what is happening at the scene(s) of the incident, be it a fire, flood, hazmat, riot, or SWAT operation. With this information, the incident commander is better able to make appropriate command decisions. Via our 2 meter, TV net controller, the Incident Commander is able to request BCARES cameras provide him with specific images and information. BCARES is able to routinely provide television and all of its other communication services in a completely infrastructure free manner.

Many times every year, BCARES is asked by our local law enforcement and fire departments to provide TV coverage of both real emergencies and also multi-agency training exercises. These have included situations such as large, multi-agency forest fires, flash floods, hazardous materials incidents civil disturbances, large political demonstrations and protests, Halloween on the Pearl St. mall, University of Colorado football games and SWAT operations. Boulder County ranks as the leading flash flood threat

zone in the state of Colorado and BCARES is specifically written into County emergency planning. BCARES also has an office (ham shack) in the 911 center EOC.

BCARES was organized and incorporated by Boulder County and the local ham clubs, in 1977 after the disastrous 1976 Big Thompson Canyon flash flood which claimed 144 lives. The official office of BCARES is in the Boulder City/County Disaster Management, in the county 911 center. BCARES is recognized by the county as being both the ARES and RACES organization for the county.



Fig. 2

BCARES' most shining moment occurred in Sept. 2010 when one of the worst forest fires in Colorado history broke out in Boulder County. The Four Mile Canyon fire burned over 6,400 acres of forest and destroyed 166 homes. BCARES assisted firefighters providing live TV coverage from mountain tops back to the 911 center for a week. At the end BCARES was credited with saving several homes. More details are found in a paper published in the May, 2011 issue of QST [2]

Live TV - not Slow-Scan!

When most hams think of amateur TV (called ATV), they immediately assume slow-scan TV, as found on HF. This is not what BCARES does. Our TV is commercial broadcast grade, real-time, live, video with full color and stereo sound transmissions. It uses state-of-the-art, high definition (1080P) digital TV modulation. Now called for short, DATV. We transitioned from the old analog, NTSC, TV to modern digital TV ten years ago. On the 70 cm ham band, we run full 6 MHz band-width, DVB-T, TV transmissions. We also use the 23 cm band for ATV.

Multiple Channels

There are four ATV channels available on the 70 cm band (Channels 57, 58, 59 & 60). BCARES has the capability of using all four channels

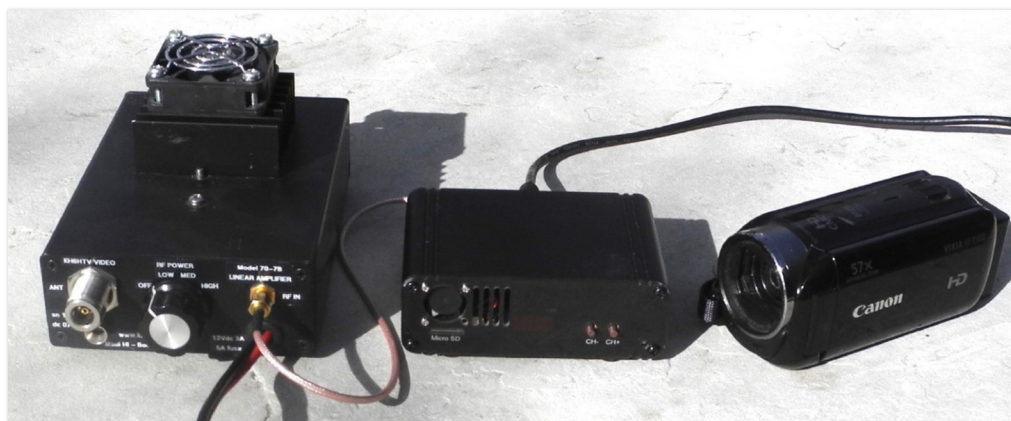


Fig. 3 Typical 70 cm Amateur digital TV transmitter with camcorder

simultaneously. Using a quad processor, all four channels are displayed simultaneously in the Emergency Operations Center (EOC) situation room on a large screen video monitor.

Equipment Required & Cost Considerations

DATV Transmitter: The cost for a typical amateur TV transmitter is comparable to that of an entry level HF transceiver. Fig. 3 shows the minimal equipment required. We use low cost camcorders as our TV cameras. The box in the middle is a digital TV modulator. It takes the HDMI A/V input from the camera and puts it into the correct DVB-T broadcast format. It also includes a frequency synthesizer covering from 170 MHz to 2.6 GHz. The box on the left is an RF linear power amplifier to boost the milliwatt level signal from the modulator up to 3 Watts.

battery. The battery is capable of running the transmitter in 100% duty cycle for several hours.

DATV Receiver: A DVB-T receiver is quite simple and low cost. All that is required is a consumer grade, set-top box receiver and an HDMI video monitor. The set-top receivers are available for less than \$50.

DATV Antennas: We use normal 70 cm band antennas as with other ham rigs. The only key requirement is band-width. The antennas used must be capable of operating over the entire 70 cm ham band.

DATV Repeaters: Repeaters are also available for digital amateur TV. Their cost is comparable to building a conventional 70 cm FM voice repeater. Boulder has had a TV repeater since the late 1970s. In the early days, it was an analog, NTSC, repeater. Today, it is a digital repeater using the DVB-T format. The W0BTB-TV repeater is located on a high mesa south-west of the city of Boulder. It is 900 ft. above the city and gives coverage over the eastern prairies from Denver north almost to Cheyenne, Wyoming. It does not provide coverage into the mountains. The 70 cm output is on channel 57 (423 MHz). We use vertical polarization.

As evidence of the importance that Boulder sees in having ATV coverage for public safety, BCARES recently received a grant of \$30,000 from Boulder County to enhance its communications networks including ATV. BCARES has recently purchased two additional DATV repeaters to

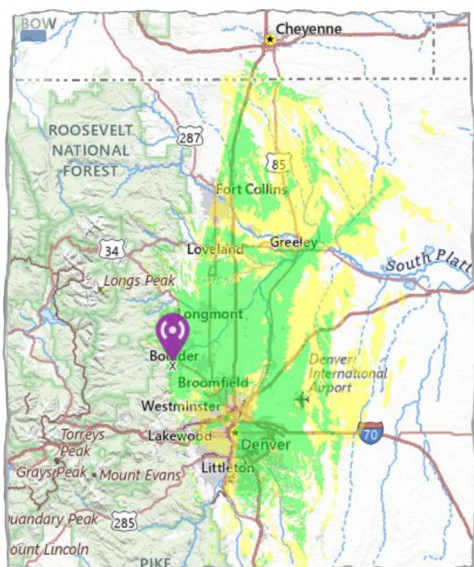


Fig. 4 Coverage map for W0BTB, Boulder, Colorado, 70 cm repeater. Yellow shaded areas are weak signal. Green shaded areas are for strong signals.

enhance its TV coverage of the mountainous western portion of the county. They have not yet been installed in permanent sites.

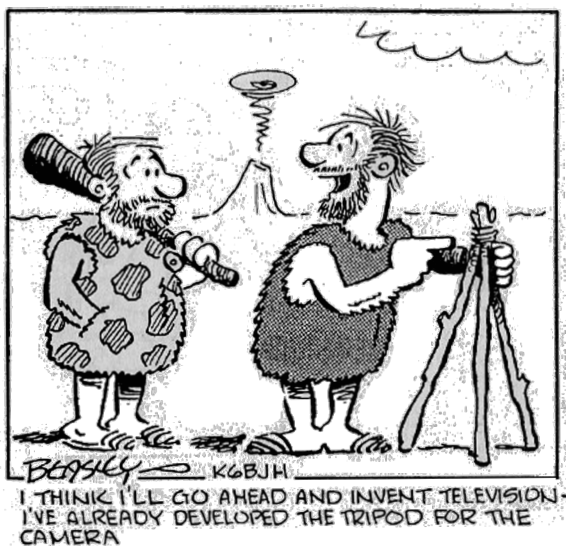
Additional Reading and Resources

To find out more about ATV and DATV in particular, the first place to go is the "ATV Handbook" [3]. In addition, I am available to give talks with power-point slides and live demonstrations of DATV equipment to amateur radio clubs and ARES groups either as an in-person presentation or via zoom.

~ Jim KH6HTV

References

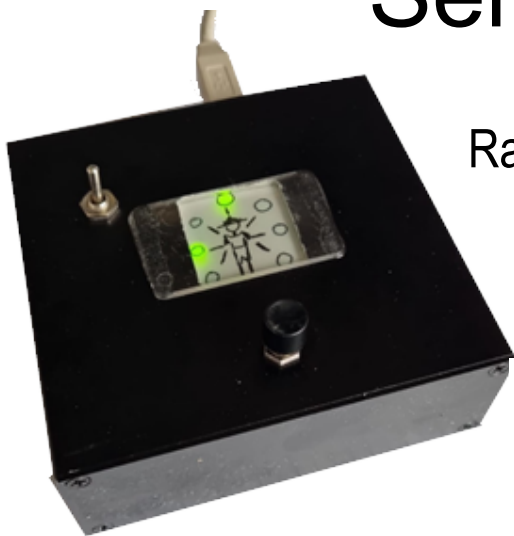
1. "Add Television To Your ARES Tool Kit", Jim Andrews, KH6HTV Video application note AN-9, Oct. 2011, 5 pages
2. "Boulder Hams Fight Forest Fires With Video", Jim Andrews, KH6HTV, QST, May, 2011, pp. 76-77.
3. "ATV Handbook - an Introduction to Amateur TV", Jim Andrews, KH6HTV Video application note, AN-55a, Feb. 2021, 44 pages.
4. KH6HTV Video web site, www.kh6htv.com many application notes on ATV including the above are all available in .pdf format to be down-loaded. Also a supplier of DATV equipment, including transmitters, receivers, and repeaters



Fun with Arduino and Semaphore Signaling

Radio Scouting Project

by ERWIN VAN DER HAAR PA3EFR



For many radio amateurs, one of the most rewarding parts of the hobby is sharing technical curiosity with young people. This Arduino semaphore project was created with exactly that spirit in mind. It combines electronics, programming, radio history, and practical scouting use into a single small device that is both educational and genuinely fun to build and use. The end result is a compact semaphore trainer box that can be used during scouting meetings and events such as JOTA and TDOTA. It offers a playful way to introduce communication principles while also giving young builders the satisfaction of creating something real and working with their own hands.

The Radio Scouting Fellowship of PA3EFR/J developed this small learning box, which could be used at meetings or as educational decoration.

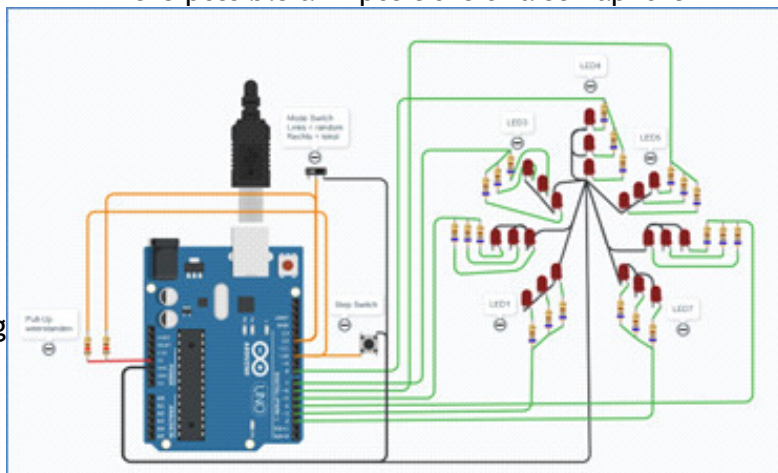
A Project That Is Simply Fun

What makes this project special is how quickly it becomes engaging. During construction, participants enjoy soldering the LEDs, wiring the controls, and watching the circuit slowly come to life. When the software is uploaded to the Arduino, the project immediately starts responding to button presses, which gives

instant feedback and keeps motivation high. At the same time, the project introduces the historic semaphore signalling system in a playful way. Instead of learning it from a book, young people see letters appear in front of them and can try to recognize or reproduce them. Once finished, the device turns into a teaching tool that can be used again and again during scouting activities.

The Semaphore Trainer

The semaphore trainer is built around a standard Arduino board and uses seven LEDs to represent the possible arm positions of a semaphore



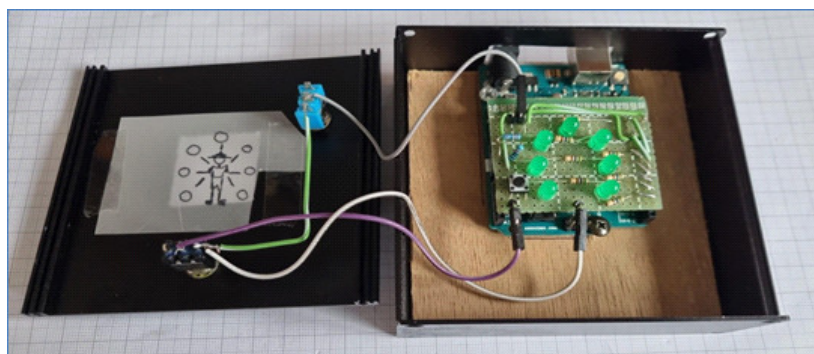
operator. A push button allows the user to step through characters, while a switch selects between operating modes: pre-defined text or random characters. The device can display letters, numbers (with “start-of-numbers” and “end-of-numbers” characters built-in); predefined messages (with “start-of-message-sequence” and “end-of_message_sequence” built-in), and an idle routine where even then characters are included. The goal is not only to show semaphore characters but also to help users actively learn and recognize them.

Learning Without Feeling Like a Lesson

One of the strengths of this project is that learning happens naturally. While building the device, participants are introduced to basic electronics concepts such as polarity, current limiting resistors, and wiring techniques. Programming the Arduino adds another layer by showing how software controls hardware. At the same time, the historical background of visual signalling methods can be explained, linking modern microcontroller technology to traditional communication methods. Because participants are busy building something interesting, the educational aspect feels natural rather than forced.

Simple Hardware, Big Impact

The hardware design intentionally stays simple so that beginners can successfully complete the project. The limited number of components keeps costs low and reduces build errors. Despite this simplicity, the finished device looks impressive and clearly demonstrates how a microcontroller can control multiple outputs in a meaningful way. This balance makes the project suitable for short workshops, club evenings, or multi-session scouting build activities.



Software That Supports Training and Demonstration

The software was written to support both demonstration and training use. The device can show predefined text, generate random training characters, and perform automatic test sequences at startup. Special care was taken to make operation reliable and predictable, which is important when the device is used by many different people during events. The random training mode is designed so that letters appear more often than numbers, making it easier for beginners to learn step by step.

Perfect for JOTA and TDOTA Activities

During radio scouting events, the semaphore trainer provides an excellent additional activity. It can be used to introduce communication history before radio contacts are made, or as an educational game while participants wait for their turn on the radio. The device also helps demonstrate that communication does not always require modern digital technology. Because the trainer is small and robust, it is well suited for outdoor and field use.

Building Together

When building the project with young people, it works well to first introduce the idea of semaphore signalling and explain why it was historically important. After that, construction can be done step by step, allowing participants to see progress quickly. Uploading the software together is usually a highlight moment, because the device immediately starts working. The final stage can focus on learning real semaphore messages and creating small communication games.

Room for Creativity and Expansion

Although the base project is simple, it leaves plenty of room for creative extensions. More advanced participants can experiment with adding sound feedback, connecting the device to radio equipment, or building larger demonstration models. The Arduino platform makes it easy to modify the software, which encourages experimentation and deeper learning. The repository for

this activity: <https://github.com/PA3EFR/Arduino-Semafoor> where the script can be found for this project.

Conclusion

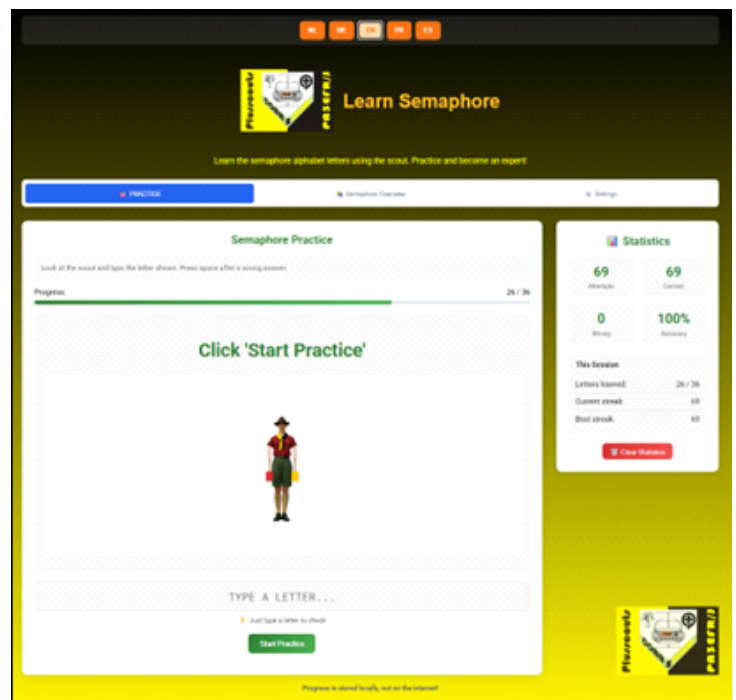
This Arduino semaphore trainer combines the spirit of amateur radio, education, and fun in a single project. It shows young people that technology can be creative, interactive, and meaningful. The combination of building, programming, and learning a real communication method makes it a powerful learning tool for scouting groups and radio clubs alike.

In case this hardware learning tool is too much or you would like to add an online version of this functionality, then have a look at our site <https://qrz.pa3efr.nl/Semafoor/index.html>

On behalf of the Plusscouts PA3EFR/J: enjoy building and experimenting.

73,

~ Erwin PA3EFR



The North Fraser Club Balloon Project

High-Altitude Amateur Radio on 925 MHz

The North Fraser club is nearing flight readiness on a technically ambitious high-altitude balloon (HAB) mission that integrates multiple amateur radio subsystems across VHF, UHF, and HF bands. The primary flight is designed to reach altitudes of approximately 30-35 km ASL, providing an opportunity to evaluate propagation, link reliability, and payload integration from the lower stratosphere.

925 MHz SSTV Downlink and Architecture

At the core of the payload is a 50 mW transmitter operating at 925 MHz, configured for slow-scan television (SSTV) image transmission. The system is designed to transmit still images at a 30-second cadence, enabling regular visual telemetry throughout the ascent and float phases. Initial field testing has demonstrated

viable link performance: transmissions from Cypress Mountain Lookout were successfully received by a mobile station located approximately 21 km away in Richmond.

The SSTV subsystem employs WENET, an Australian-developed platform that is believed to represent the first use of SSTV on the 900 MHz amateur band in a balloon application. A key feature of WENET is its ability to reconstruct image data from multiple geographically separated receiving stations. If a receiving site experiences packet loss



or fading, missing segments of an image can be recovered from another site that successfully received those packets. To exploit this capability, the operational plan includes both a fixed receive station and a mobile receiver during flight operations.

Recognizing the challenges of low-power UHF propagation from a moving aerial platform, the team is implementing antenna improvements. With design support from VE7TOA, a new antenna is under development to improve radiation efficiency and overall link margin compared to the initial test configuration.

Position Reporting and Redundant Tracking

The payload architecture emphasizes redundancy in position reporting. Two independent GPS sources are flown. One GPS feed is embedded directly into the SSTV imagery, providing visual confirmation of position with each transmitted frame, while a second GPS source drives a 2m APRS beacon for continuous tracking using standard amateur packet infrastructure. This dual-path approach improves the likelihood of maintaining situational awareness even if one telemetry channel is degraded.

Cross-Band Repeater Payload

In addition to telemetry and imaging, the balloon carries a UHF-VHF cross-band repeater, further expanding the platform's utility. From a stratospheric altitude, even modest repeater power can yield exceptional coverage footprints, enabling wide-area experimentation and offering participating amateurs a rare opportunity to

access a repeater with near line-of-sight paths over hundreds of kilometres. The inclusion of this subsystem reflects the project's goal of combining experimental payloads with practical amateur radio operation.

All telemetry, imagery, and audio are planned to be downlinked and streamed live, with the entire flight

Adrian VE7NZ explains the balloon payload to the Kwantlen Park School RF Communications class



broadcast via YouTube.

This approach allows both licensed amateurs and the general public to follow the mission in real time, while also creating a persistent archive for post-flight technical analysis.

Parallel Pico Balloon Development on HF

Running in parallel with the HAB project is a Pico balloon scheduled for launch in February. Unlike the short-duration high-altitude flight, the Pico platform is optimized for long-duration, low-mass operation at approximately 10-14km ASL. The payload is solar powered and transmits its position every ten minutes using WSPR on the 20-metre band, but only when sufficient sunlight is available to support the transmitter.

The club's previous Pico balloon achieved 2.5 circumnavigations of the Earth, demonstrating the effectiveness of low-power HF propagation and the global WSPR receive network. The upcoming flight aims to equal or exceed that performance.

Ground Testing and Payload Integration

Recent integration tests highlight the project's hands-on engineering approach. One image shows the cross-band repeater payload suspended from a tree, fitted with a home-built 2m antenna constructed by VE7TOA, while a second payload incorporating APRS and the 925MHz SSTV transmitter undergoes parallel testing. These trials validate mechanical suspension, antenna orientation, and subsystem coexistence prior to flight.

By combining a low-power 925MHz SSTV downlink, redundant GPS tracking, a cross-band repeater, and a concurrent HF Pico balloon program, the North Fraser club continues to push the technical boundaries of amateur ballooning. The project serves as a practical demonstration of modern digital modes, multi-band payload integration, and collaborative reception techniques—showcasing what is achievable with careful engineering, regulatory compliance, and the experimental spirit of amateur radio.

~ Information provided by Adrian VE7NZ

Club In Focus

The Orca DX and Contest Club

A Beacon for Amateur Radio Enthusiasts on the West Coast

by JOHN SCHOUTEN VE7TI

In the world of amateur radio, where enthusiasts chase distant signals across the globe and compete in high-stakes contests, few organizations embody the spirit of adventure and community quite like the [Orca DX and Contest Club](#). Based primarily in British Columbia, Canada, this vibrant group has become a hub for DXers—those who specialize in long-distance communications—and contesters alike. Founded in the fall of 2010, the club serves as an open community for all amateur radio operators with an interest in high-frequency (HF) DXing and contesting, extending its reach to the broader Canadian Southwest and US Pacific Northwest region.

A Rich History Rooted in Passion and Expertise

Orca came out of the BCDX Club, since that group had capped their membership based on how many could fit in an average home since the meetings were in private residences. Orca was founded by Dave VE7VR in 2010 and about 10 other members of the BCDX Club. Vocal advocates in the beginning were Steve VE7CT, John VA7JW, and Dick N7RO. Orca DX has grown into a supportive network for operators pursuing rare contacts and competitive scores. The club's formation in 2010 filled a gap for BC-based amateurs seeking camaraderie in DXing and contesting.

From its inception, Orca DXCC has emphasized inclusivity, welcoming members from across Canada and beyond who share a passion for pushing the boundaries of radio communication.

Mission and Activities: Chasing Signals and Building Community

At its core, the Orca DX and Contest Club is dedicated to supporting DXpeditions—expeditions to remote or rare locations to activate unique radio entities—and offsetting the costs of events like their annual British Columbia QSO Party (BCQP). The club actively participates in major international contests, such as the CQ Worldwide DX Contest, ARRL International DX Contest, and various RTTY events. Members post their scores on platforms like the 3830 reflector, fostering a sense of friendly rivalry and collective achievement.

Orca DXCC also hosts the BC QSO Party, a highlight of the calendar that runs over a weekend in early





February. The BC QSO Party has grown in popularity, with detailed results from past years available online, showcasing strong performances from members and participants worldwide. The club's influence extends through its members' individual accomplishments. For instance, in contests like the ARRL 10M Contest or CQ WW CW, Orca operators consistently log impressive scores. In 2025, the BCQP results highlighted top scorers, reinforcing the club's role in promoting regional activity.

This event encourages contacts with BC stations, awarding plaques and certificates to top performers in categories like single-operator, multi-operator, and out-of-province entries (see the article following). Beyond contests, the club supports DXpeditions to exotic locales. Recent involvements include activations like FW7AA on Wallis Island (2024), XT2MD in Burkina Faso (2024), and upcoming ones such as 3Y0K on Bouvet Island in February 2026 and CY0S on Sable Island in March 2026.

These efforts help bring rare entities online, allowing global operators to add them to their logs.

Membership and Engagement

Joining Orca DXCC is straightforward and affordable. Annual dues for 2026 are \$24, payable via PayPal, Interac (for Canadians), or check. These funds directly support DXpeditions and event hosting, ensuring the club's sustainability. Members gain access to resources like newsletters (the "Orca Report"), propagation tools, tech tips, and supplier lists. The club's website offers practical guides, such as PDFs on building current baluns or using terrain analysis software for antenna optimization.

Socially, Orca DXCC organizes gatherings, including lunches and presentations. A November 2025 lunch at the RiverHouse in Delta highlighted the community's tight-knit nature.

The club has also sponsored major events, like the 2023 Pacific Northwest DX Convention in New

Westminster, themed "To boldly go..." in honor of daring DXpeditioners. Additionally, Orca DXCC has backed high-profile expeditions, such as the 2020 South Orkney DXpedition.

Achievements and Impact

Over its 15-plus years, Orca DXCC has made significant contributions to the amateur radio world. Its sponsorship of DXpeditions has helped activate entities ranked high on the DXCC Most Wanted List, per ClubLog data.

There are only a few membership requirements:

1. You must be a licensed amateur radio operator
2. You have a strong interest in DXing or contesting
3. You pay the \$24 annual membership fee for use of the logo and other privileges of membership

The club endorses the [DX Code of Conduct](#), and they ask that members review the code and strive to uphold its call for courtesy and respect for other operators at all times. You should also read the club's aims and principles to ensure they fit with your own aims.

There is a packed schedule of contests ahead, including the ARRL International DX SSB in March. In an era where digital modes like FT8 are transforming the hobby, Orca DXCC remains a steadfast advocate for traditional and innovative radio pursuits. For anyone in BC or the Pacific Northwest with a radio and a dream of distant horizons, this club offers not just resources, but a family of fellow explorers. Whether you're a seasoned contester or a newcomer chasing your first DX contact, Orca DX and Contest Club invites you to join the pod.

~

<https://www.orcadxcc.org/>



The BC QSO Party 2026

Initial Thoughts

by REBECCA KIMOTO VA7BEC

Rebecca Kimoto VA7BEC

is the Secretary and contest coordinator for the British Columbia QSO Party, held on the first full weekend of February each year.

Visit ORCA at: <https://www.orchadxcc.org/index.html>

The BCQP 2026 took place Feb 7-8, 2026, and drew participation mainly from within North America, as QSO parties tend to do.

At the time of this writing, the log deadline is still a few days off. But as of February 19, a total of 377 logs have been submitted: 51 from BC stations—already more than in 2025—and 45 from the rest of Canada (up from 40), 275 from the US (a big drop from 322) and 6 DX (down from seven). The received number may still rise, but one thing is sure: BCQP always draws a lot of attention from the U.S., which keeps CQing BC stations very busy but also shows that there is demand from outside BC to have QSOs with BC stations.

Final scores for BCQP 2026 will probably be announced in March, and the number-crunching analysis, based on the content of submitted logs, will be included in the after-party report that should be ready sometime in April, barring unforeseen circumstances.

By the way, everyone who submitted a log will have received a confirmation email through the log uploader page. If you submitted a log—or thought you did—and don't see your log in the Received Logs list (webpage address: <https://bcqp.contesting.com/bcqplogsrcvd.php>), please contact me at va7bec [at] gmail [dot] com. I will still accept logs that come a bit late, as long as it's clear that the initial attempt to submit occurred before the log deadline.

CONDX during BCQP weekend was totally unpredictable. Literally, from one minute to the next, band conditions changed, from terrific to unworkably awful. And from some of the comments I heard during BCQP, this was a widespread phenomenon, not just local QRM or the capricious antics of the propagation gods in select areas.



Consequently, we were pleasantly surprised by our results at sponsor station VA7ODX, which generally mirrors the two-mode efforts of other stations where operators work the whole 20 hours of BCQP. Sunday CONDX seems to have been better than on Saturday, but there were good moments and bad moments on both days.

Last year (2025), 10m was the money band. This year, it was 20m, followed closely by 15m.

Another difference was backscatter. It was uncharacteristically easy to work BC stations on the high bands, as backscatter offset the challenges many Vancouver Island stations have in hearing and being heard by stations in the Metro Vancouver area. Stations just south of the border were also able to maximize backscatter opportunities within the typical skip zone and put more BC districts into their logs.

Overall, participation appears to have been solid, underpinned by representation from all over the province. CW might have been the mode of choice. It'll be interesting to see what my number-crunching analysis reveals. Stay tuned for that.

BCQP is a wonderful opportunity for newcomers to the hobby—and contesting in particular—to learn how to execute QSOs quickly and accurately, trade exchange info if necessary, become familiar with logging software and, of course, deal with less-than-ideal or weirdly and unexpectedly good propagation, etc. BCQP is also the perfect opportunity to make sure your station is operating-ready. Better to find out during BCQP if you've got an antenna issue or in-shack tech issue that requires attention before a big contest when every minute on the air counts. (Not that every minute during BCQP isn't crucial, too, for BCQP fans.)

On behalf of Orca DX & Contest Club, Koji and I extend our sincere appreciation to everyone who participated in BCQP 2026 and/or helped others get on the air. Let's do it again in 2027, on February 6-7.

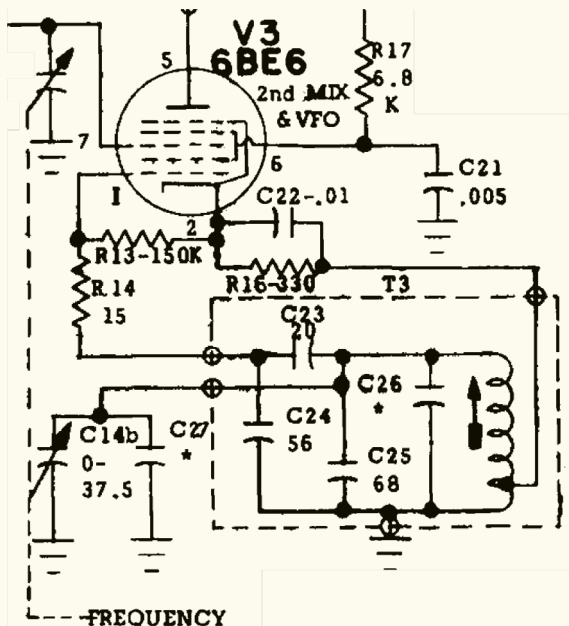
73,

~ Rebecca VA7BEC,
Contest Manager, BCQP

(PH op @VA7ODX) Koji VA7KO (CW op @VA7ODX)

‘Probing’ Around Inside an Old Receiver

by KEN GRANT VE3FIT



I own an old Drake model 2B vacuum tube, Ham Bands only receiver, dating from the early 1960s.

During a recent overhaul (cleaning, alignment etc), I undertook to check the voltages on the various vacuum tube pins. The Drake manual provides a chart with all of the expected readings. They are all referenced to ground and were taken by Drake using an 11 Meg Ω input impedance Vacuum Tube Volt Meter (VTVM). Such an instrument was what was used back then. The modern hand-held Digital Multi-meter (DMM) was still many years in the future.

I used my DMM, a Fluke 75, and all went well except for the reading at pin one (the grid) of the 6BE6 Variable Frequency Oscillator (VFO) tube. See the partial schematic in Figure 1.

The voltage there was supposed to be $-.5V$ according to the chart, but I was reading $+3V$! And the receiver did work (after I removed the probe). I confirmed the same readings on several other 2Bs that I had access to.

As I was taught when being trained as a technician, you would normally expect to see a slight negative voltage at the grid of a vacuum tube oscillator. So what was going on?

Could the difference be that I was using a DMM and Drake used a VTVM? After a little internet research, I found a very interesting book from 1960 (available for free on-line) titled “the V.T.V.M , how it works and how to use it” by Rhys Samuel. It appears that the Z_{in} of both instruments is $10\text{ Meg}\Omega$ shunted by about 40 pF . But, the Z_{in} of the old VTVMs was usually specified as just ‘ $11\text{ Meg}\Omega$ ’.

Here’s the difference: The VTVMs usually came with a plug-in probe that contained a $1\text{ Meg}\Omega$ resistor right at the probe tip. So, Z_{in} was, in fact, $10\text{ M}\Omega + 1\text{ M}\Omega$ for a total of $11\text{ M}\Omega$. That resistor was called an isolating resistor.

A low-wattage resistor has a shunt capacitance of 1 or 2 pF across it. This capacitance is in series with the input capacitance of the test instrument, so that the total capacitance presented to the device-under-test (the grid of the vacuum tube in this case) is much less than 1 pF. The tube keeps oscillating and the test meter reads the DC level.

My DMM probe doesn’t have an isolating resistor in its tip, so the full 40 pF of DMM input capacitance (plus any stray capacitance) was killing the oscillations when I touched the probe

to pin 1 of the tube. The DMM read the cathode bias voltage, $+3\text{V}$, via resistor R13. When I put a $1\text{ M}\Omega$ resistor in series with the probe tip, I read $-.46\text{V}$; just about what Drake called for.

This revelation led to me making a proper probe for such situations. See Figure 2. It was made from an old BIC ball-point pen and a $1\text{ M}\Omega$, $\frac{1}{4}$ Watt resistor. The pen tip is copper or brass, so it is solderable and makes a perfect probe tip. The messy part is draining any remaining ink from the tip.

Because the $1\text{ M}\Omega$ probe-tip resistor and the $10\text{ M}\Omega$ DMM input resistance form a voltage divider, you will have to add 10% to the DMM reading to get the true value of voltage.

Restoring old gear is rewarding, a lot of fun and certainly a learning experience.

~ Ken VE3FIT





This past Christmas rekindled some fond memories. The joy of experimenting with electronics as a teenager is often ignited by that one perfect gift—the kind that arrives under the Christmas tree and opens an entire world of discovery. For me, it happened on my 12th Christmas in the early 1960s. I unwrapped the Revell shortwave radio kit, purchased for an incredible \$9.90 (reduced from \$24.95) at the downtown Seattle RadioShack store. Like all boys my age, I was already familiar with the Revell brand name from building plastic model kits.

This beginner-friendly receiver project required no soldering and included an astonishing 308 parts - most of which were bolts, nuts and washers. The real challenge—and delight when they ultimately worked—came from carefully winding several plug-in coils to cover three shortwave bands plus the standard AM broadcast band. A simple 10-foot wire strung as an antenna, and another clipped to a radiator for ground, was all it took to connect to the globe.

Once assembled, the little receiver came alive with squeals voices from afar: Radio Nederland with its Dutch melodies, the

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 Worthy of a \$100.00 kit! Precisely illustrated, clearly detailed, step by step assembly instructions and parts list. Special how-to-do-it drawings.

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 What a surprise! This dramatic, impressively attractive carton opens to a big 25 1/2"x18 1/2"x3" in a thrilling display of the entire kit contents. What better way to set the scene for all the fun that's in store for the lucky one.

32 Shop Pages 34-41 for Terrific Values in Portable, Transistor and Table Radios!

From a 'Rocket' radio

To an almost real one...
and beyond

by JOHN SCHOUTEN VE7TI

booming propaganda of Radio Moscow, the familiar tones of BBC International, and the intriguing broadcasts of Radio Free Europe. I spent hours tuning, listening intently through headphones, and excitedly sending for and receiving QSL cards to confirm those distant catches. It felt like magic—pulling signals from thousands of miles away with something I had built myself.

This was actually a ‘step up’ for me, as my interest began even earlier with a \$1.49 purchase of a ‘Rocket’ radio at the locally infamous Woodward’s \$1.49 day. It was intriguing that, with no source of power, it pulled in all the stronger Vancouver area radio stations. That fascination developed further thanks to my older brother. He owned a Trio TR-59 multiband shortwave receiver (manufactured by Kenwood and also marketed under the Lafayette name). In our shared bedroom, we’d huddle together for hours, slowly dialing across the bands, sharing the thrill of faint signals emerging from the static. Those late-night sessions, filled with wonder and the occasional rare station, bonded us and deepened my love for radio.

This experience mirrors many vintage radio enthusiasts, including amateur radio operator Carl Nord WA1KPD who’s QRZ profile re-awakened my interest when I was looking for information on the Revell. Carl recalls similar joys with his own classic receiver kit, and I was amazed to see a photo of him also turning the dials on the familiar Trio.

I’m actually glad that the Internet didn’t exist back then... Like most kids today I would have missed out on this journey. Those early hands-on adventures led to a lifelong passion for electronics and eventually to amateur radio. Earning my certificate opened doors to even greater adventures: making global voice contacts, learning Morse code, experimenting with digital modes like FT8, building and experimenting with better antennas—some of them quite bizarre, and even participating in emergency communications. Unlike many hobbies that fade, amateur radio evolves—offering new technologies, friendships across continents, and the enduring thrill of a rare DX contact (perhaps with someone on a remote DX-pedition or even an astronaut aboard the ISS).

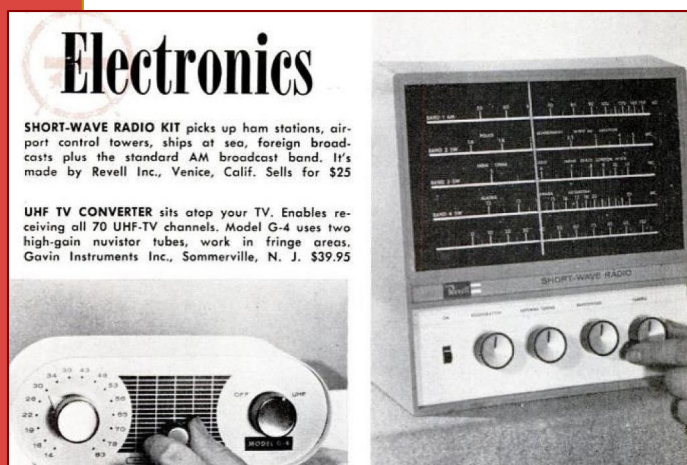
Six decades later, the pull remains strong. I’d love to recreate that Revell kit today, even if it’s modernized on a breadboard. While exact schematics or interior photos of the original are elusive (similar 1960s regenerative designs featured basic transistor circuits and hand-wound coils), the spirit lives on in vintage-inspired builds.

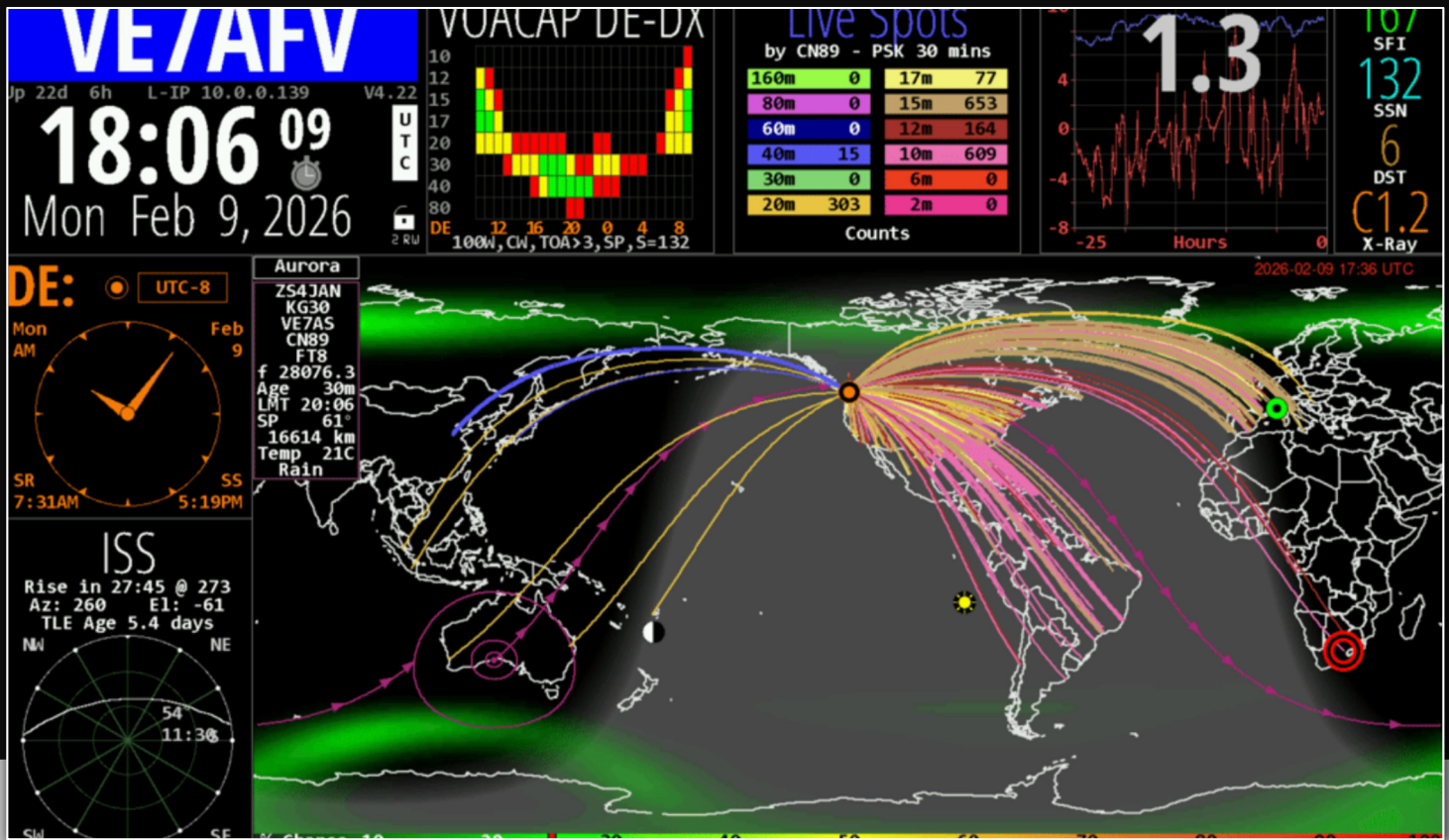
https://www.nutsvolts.com/uploads/wygwam/NV_1020_Goodsell_Fig-2.jpg

In today’s world of instant digital everything, that patient tinkering—with coils, wires, and faint signals—reminds us of the profound satisfaction found in creating and connecting with our own hands. From a 12-year-old’s Christmas kit to a lifetime of ham radio adventures, the spark endures, lighting up the airwaves and the imagination.

~ John VE7TI

Like myself, Anthony Francis-Jones has a soft spot for the educational electronic kits from days gone by. In a [recent video](#). He shows the insides of a Philips EE08 two-transistor radio kit. You can [download](#) the classic instruction books for the EE08 and EE20 kits, which were very educational, in your favorite language. - Hackaday





When an app outlives its creator

by Peter Vogel VE7AFV

OpenClaw, Clawdbots, Moltbots, Moltbooks, Claude Code, GPT 5.3, Grok Imagine, Opus 4.6, agentic AI, AGI, ASI ... so much for tech terms in the news as I write this column.

Do you ever get the feeling that you can't keep up with the breakneck speed of technological evolution? "Evolution" doesn't even seem an appropriate word for the circumstances.

In recent days, one of my niche areas of interest, amateur radio, lost an innovator, Elwood Downey, who created and operated a widely used application called HamClock. Although it had started life as just that, a clock display with various time formats radio people use, it had morphed over time into a very sophisticated interface giving tremendous detail about radio signal propagation and space weather metrics.

Those in the amateur radio field learned of his passing through a note he left on his website and through an auto-response email. Not only did it announce his passing, but it noted his HamClock service would cease to run in June of this year.

Now you might think programs don't just cease to work spontaneously. Well, in this case, HamClock was heavily dependent on what we call a server backend, with associated internet domain names. It will indeed cease to function.

Cease to function because domain names expire, servers require electricity to operate, and telecommunications utilities have fees for their operation. You get the idea. Someone was paying bills behind the scenes to keep the HamClock service operational, with most end users completely unaware of the magnanimity involved.

In the days following his passing, two teams, and later others, set to work almost immediately to see if they could duplicate the legacy of Mr. Downey's HamClock. As I write this column, not yet a week later, both have managed to achieve

Above: HamClock running on Peter Vogel's radio system, showing worldwide radio activity and space weather in real time. With the passing of HamClock's founder Elwood Downey will go the service itself. (Peter Vogel image)

working versions, one team almost duplicating the original, the other taking a from-the-ground-up approach and making use of modern web-interface coding constructs not available when HamClock originally took to screens across the world.

This new work to ensure HamClock lives on, either directly as it is today or in some modified form, raises interesting questions about content we access over the internet from a privately owned resource site. What should happen to such a site when its owner passes away? Are there legal issues that arise? Is the look and feel of an internet resource subject to a form of copyright, for instance?

In the case of HamClock, we have a partial answer. The actual part of HamClock, which users interact with directly, installed locally on either a Raspberry Pi computer or on a Windows laptop through the Linux subsystem, carries an MIT license. Essentially, this means the look and feel can be copied without legal issue.

As for the backend, the server content behind the scenes, there it becomes a little more complicated, perhaps even a lot more complicated. The physical server has an owner or owners. At this stage, whether such ownership can be transferred or whether the estate even provides for such an ownership change is not known.

This needn't be an obstacle, though, as the server's real work was pulling in complex data from other sources, many owned by departments of the United States government (for example, the Space Weather Prediction Centre, operated by the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS)). Such data is generally in the public domain, although the questionable work of Elon Musk and his Department of Government Efficiency (DOGE) has jeopardized some of the projects and, consequently, data within these agencies.

Other data in HamClock was pulled from privately owned sites operated by others in the amateur radio field, and any use going forward would require agreements with those site owners. Again, not an obstacle in principle.

However, as the web-based solution team is discovering, processing some of this data and getting it to thousands of HamClock installations around the world is not a straightforward task, especially if it is to be accomplished with near-instant delivery. So far, as of this writing, this is an obstacle.

What is becoming apparent to end users is that HamClock's creator was fully funding the backend operation, running dedicated servers and absorbing the incurred costs totally on his own, much in the spirit of how amateur radio has run for around a hundred years.

If HamClock, as I know it, disappears, I shall greatly miss it. It is a testament to someone who not only had a vision but who had a talent for bringing it to fruition in an elegant way.

Whether or not HamClock has any meaning to you is really immaterial to this story. What it does is remind us that "free" products and services have a cost and, in some cases, a very human aspect to them.

Ideally, HamClock lives on, indistinguishable from how it is today. That will indeed be a tribute to Elwood Downey, callsign WB0OEW.

~ Peter VE7AFV
pvogel@outlook.com

Follow me on Twitter/X (@PeterVogel) or on Bluesky (petervogel.bsky.social).

Web-Based Alternatives

[DXLook.com](https://dxlook.com) is a free, web-based propagation platform that offers many similar capabilities without requiring dedicated hardware or software installation.

The ham radio community owes a debt of gratitude to Elwood for creating and maintaining this remarkable tool for so many years.

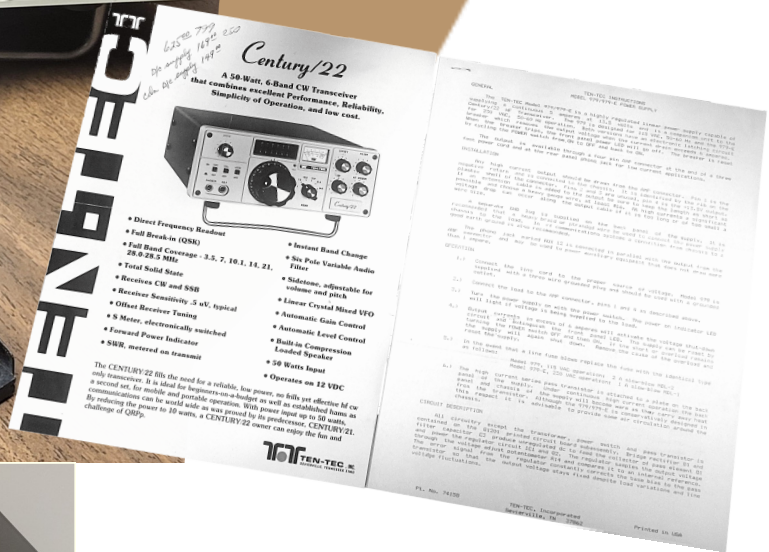
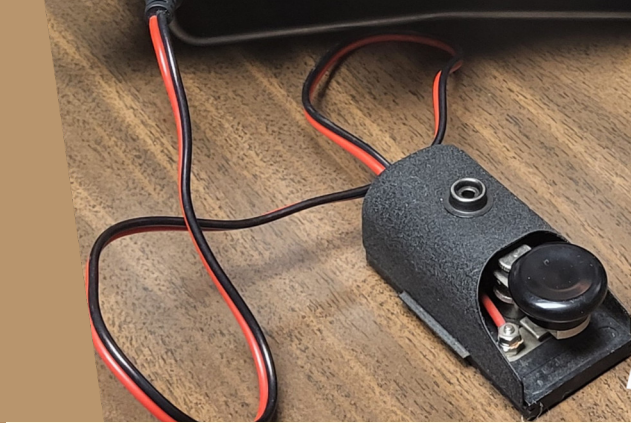
The ham radio community has several other tools that may help fill the HamClock gap:

- Open HamClock (openhamclock.com/) - Probably the closest to the original. Web based.
- DXView (dxview.org) – Desktop application for DX cluster and propagation
- VOACAP Online (voacap.com) – Web-based propagation predictions



A 'Barn Find' Radio

by Mike Kassay VE3MKX



A ham radio "barn find" is discovering vintage piece of amateur radio gear (transmitters, receivers, test equipment) in barns, garages, attics or closets!

This story isn't anything out of the norm, just a fluke. It was a regular day at home, surfing the net while having breakfast. I eventually surfed onto the local swap site and found the listing, 'For Sale - Mint Ten Tec Century 22 with matching power supply, never installed optional crystal calibrator, and a brand new never connected or used straight key'. My curiosity got me. Do I need another radio?? Always!! You can never have too many!! So I sent an email requesting pictures of the gear, expecting that the rig had been already sold. Being a ham for over 34 years, one man's 'mint condition' is another man's very well used piece of gear! I always refer to the Collins Collectors Associations radio grading scale for some guidance. A short time later I received an email requesting that I give the seller a call. It hadn't been sold.

So I made the call and like any other conversation with any ham, an expected two minute call turned out to be a 25 minute conversation.

HIGHERLY 411 EAST SEVIERVILLE, TENNESSEE 37622 (615) 453-7172

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HF TRANSCEIVER
MODEL 579

PADDLE

SPEED

TEN-TEC, INC.

SEVIERVILLE, TN 37862
MADE IN U.S.A.

The seller advised me that the rig was an estate item, from the Chatham, Ontario area. Prior to this seller, nobody really knew anything about it. It appeared that the radio was bought and never used. Pictures were sent and he was right! The radio was a true barn find. We made a deal and I was not disappointed. There was not one finger print or a spec of dust on this radio ! No rust or moisture damage. A true time capsule. All the manuals and sales receipts were there, warranty card too... wonder if its still valid??!!

This radio has sat in its original state for over 38 years and I'm still trying to find the story behind it. Was it bought and the owner passed back in 1987? Did he hide it from his XYL and then forgot about it or did his interests change or did life happen... Was it ever opened by the original ham buyer or was it put away and then opened by the estate?? Many questions to be answered. The radio purchase was over \$1000 in 1987 dollars, which is approximately \$2900 in todays dollars. To spend that kind of money to hide it away doesn't make sense. When I acquired the radio, on the original box was an 'estate' label saying 'Georges HAND radio #%\$*' not Ham radio - so the ignorance and arrogance behind that statement was huge! Pretty sad when you think about it.

Who knows the true mystery behind this radio. Most of this story was all before the internet and cell phones. So referring to old radio club newsletters, call books and local hams might be the missing piece of the puzzle. I've sent out a few Emails. Time will tell!

The radio purchased was a Ten Tec Century 22, a 20W, CW only solid state transceiver which has a very strong following among QRP (low power) and CW enthusiasts. Reviewers on eHam.net praise its simplicity, clean signal, and fast, silent QSK. Yes QSK! Many users enjoy the radio for its straightforward, "pure radio fun" experience, a refreshing change from more complex, menu-driven modern transceivers. From my internet search most sites stated that less than 700 Ten Tec C22's were made from 1984 to 1987. One website quoted that there were only 679 made. So its a rare bird!

One point often mentioned is the audio quality, with many hams claiming that Ten-Tec radios have superior transmit and receive audio compared to other brands. On the other hand, there could be some minor Ten Tec maintenance issues, such as

the need to eventually replace the dial cord elastic or potential issues with the final transistors if operated without proper SWR protection. The radio is generally considered reliable and easy to repair.

Every 'barn find' radio has a story. Collectors value the mystery of why the radio was never used, who owned it, and the appeal of its untouched original 'new' state. A great coffee conversation piece.

Below are some of the radios specifications.

Ten Tec Century 22

- Bands: 10, 15, 20, 30, 40, 80 meters (HF).
- Modes: CW.
- Power Output: 20 Watts
- Current drain on RX - 500ma
- Power Requirement: 12-14 VDC, 5 Amps (Negative Ground).
- Antenna Connector: SO-239.
- Audio: Known for excellent transmit / receive audio quality.
- Features: optional crystal calibrator and cw keyer
- Receiver Sensitivity - 4 pole variable band pass filter 700hz to 200hz variable skirt attenuation
- Weight - 6 lbs
- Dimensions: Approx. 9.84" W x 3.98" H x 11.42" D (250x101x290mm).
- Key Characteristics: semi QSK
- Made in the USA: A hallmark of Ten-Tec quality and reputation.
- CW Performance: Highly regarded for its CW operation.
- Analog Focus: A classic analog rig

In Summary:

The Century 22 is a durable, quality transceiver from Ten-Tec's analog era, offering excellent audio and solid performance, especially for CW, making it a popular choice for hams seeking a reliable HF rig.

I hope you enjoyed this short story.

72 / 73,

~ Mike VE3MKX

Radio Amateurs of Canada

RAC Amateur of the Year Award 2025: Fred Archibald, VE1FA and Helen Archibald, VA1YL

Jason Tremblay, VE3JXT | RAC Community Services Officer | community@rac.ca

The RAC Board of Directors takes great pleasure in selecting Fred Archibald, VE1FA, and Helen Archibald, VA1YL, of Port Williams, Nova Scotia as the recipients of the RAC Amateur of the Year Award for 2025.

Through the RAC Amateur of the Year Award, Radio Amateurs of Canada recognizes the outstanding contributions made by Canadian Amateurs. The RAC Board considers nominations and presents the award when a nomination demonstrates exceptional contribution.

Fred and Helen Archibald have been pillars of Amateur Radio in Canada for decades. While the award traditionally reflects contributions within

a given year, their sustained excellence in 2025 - combined with a lifetime of service - made them compelling joint recipients.

Together, they have organized and operated more than two dozen DXpeditions, activating rare Canadian islands for DXCC and Islands On The Air (IOTA). Their contest efforts have consistently ranked among the top stations in North America, with several Top 10 worldwide finishes in the IOTA Contest.

Fred is widely respected as an instructor, technical innovator and equipment restorer, having mentored numerous new Amateurs and restored historic communications equipment for

RAC Amateur of the Year Award

Fred (VE1FA) and Helen (VA1YL) Archibald: Amateur of the Year 2025 and their daughter Margaret (VE2ZOO) on Walrus island (NA-121)

Through the Amateur of the Year Award, Radio Amateurs of Canada recognizes the outstanding contributions made by Canadian Amateurs.

To qualify for the title "RAC Amateur of the Year", an individual should have made an outstanding contribution to Amateur Radio in the past year or have contributed consistently to the welfare of Amateur Radio over a period of several years.



Surrey Amateur Radio Communications



museum exhibits. Helen has served as President of the Canadian Ladies Amateur Radio Association (CLARA), long-time net controller, course instructor and youth outreach advocate through Guides On The Air and Jamboree On The Air.

For many years, they have opened their station for the RAC Winter and Canada Day Contests and have been strong contributors to Field Day activities, demonstrating operating excellence and sportsmanship.

Their partnership - spanning more than 50 years of marriage and decades of Amateur Radio dedication - reflects teamwork, resilience and service at the highest level.

Radio Amateurs of Canada sincerely congratulates Fred Archibald, VE1FA, and Helen Archibald, VA1YL, on being named the RAC Amateurs of the Year for 2025. An article about the Award will be included in the March-April 2026 issue of The Canadian Amateur magazine.

For more information about the RAC Amateur of the Year Award please visit:

<https://www.rac.ca/rac-amateur-of-the-year-2025-award/>

~ Allan Boyd, VE3AJB/VE3EM
President, Radio Amateurs of/du Canada

Radio Amateurs of Canada Responds to the Closure of the Weatherradio Service in Canada

Radio Amateurs of Canada (RAC) is saddened to learn about the closure of the Weatheradio service provided by [Environment and Climate Change Canada](#).

For decades, Weatheradio has been a trusted and resilient source of real-time weather alerts and public safety information for Canadians - particularly in rural, remote and northern communities where cellular and internet coverage can be limited or unreliable.

Continuous broadcast weather alerts have assisted in supporting emergency preparedness, severe weather awareness and community resilience. Many Amateur Radio operators and emergency volunteers have relied on these broadcasts as part of their situational awareness during storms, wildfires and other public safety events.

RAC recognizes the evolving nature of communications technology, however any transition away from dedicated broadcast alerting services must ensure that no Canadians

are left without timely access to critical warnings. Redundancy in emergency communications systems is not a luxury - it is a necessity.

Amateur Radio operators across Canada remain committed to supporting emergency management partners at the municipal, provincial and federal levels. Our volunteers stand ready to assist with communications support when conventional systems fail or become overloaded.

Radio Amateurs of Canada encourages continued dialogue with government and public safety stakeholders to ensure that Canada maintains a robust, accessible and resilient national alerting framework that serves all communities effectively."

~ Allan Boyd, VE3AJB/VE3EM
President, Radio Amateurs of/du Canada

<https://www.rac.ca/rac-responds-to-the-closure-of-the-weatherradio-service-in-canada/>



“Old Barebones”

KD5ZZU’s very elegant build of a Z-match tuner

by JOHN CORBY VA3KOT



John Corby VA3KOT
resides in Owen Sound,
Ontario but is more often
found operating CW out
in the "Big Blue Sky
Shack". He especially
enjoys activating parks
for the POTA program
and blogging about his
experiences at
[HamRadioOutsideTheBox
.wordpress.com](https://HamRadioOutsideTheBox.wordpress.com)

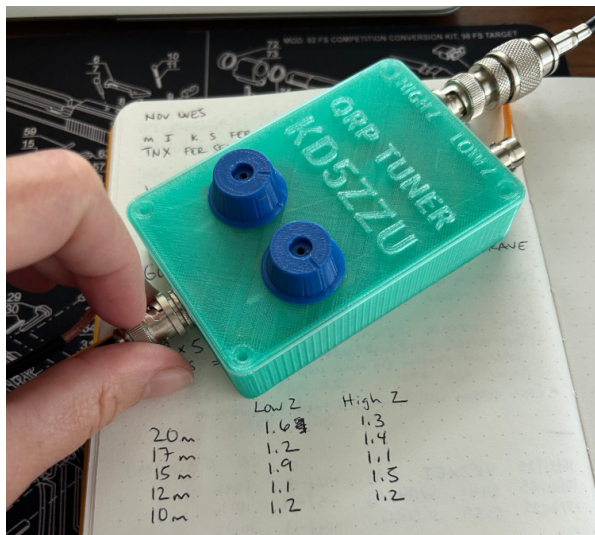
Back in October 2024 I wrote a post with the title “[Old Barebones](#)” - [A QRP Z-match Builder Project](#). The project’s purpose was to construct a simplified version of the Norcal Z-match tuner (which I also owned) to use with my QRP Labs QMX transceiver. The Norcal tuner included some features that I simply did not need - such as balanced transmission line terminals, a simple LED SWR indicator and three switches (Balanced line/BNC, Tune/Operate, High/Low impedance). The schematic was copied from the Norcal tuner - a superb design that I didn’t think I could improve. The end result was a very simple device with three BNC connectors, a toroidal inductor and two polyvaricons, all packaged in a small Amazonian plastic enclosure. Alright, it is an ugly device mainly due to the inelegant knobs I chose to use. But it works very well indeed and has become my main QRP portable antenna matching unit. Heck, it cost me a big fat nothing to build thanks to my extensive junk box stocked from years spent hoarding miscellaneous bits and pieces. When I have finished twiddling the knobs I can always put my hat over it to hide its lack of elegance.

Then, out of the blue, I received an email from Mallory KD5ZZU who expressed an interest in building her own version of “Old Barebones”. Mallory queried whether the design would work on the high bands. I had only tested mine on 20m, 30m and 40m, so I hooked it up to my home 80m EFHW and my portable 13ft tripod vertical antennas to test whether a low SWR could be achieved with Old Barebones on 17m, 15m 12m and 10m. Fortunately Old Barebones did a splendid job on both antennas so Mallory took the plunge and built her own version.

Note: My 80m EFHW (End-Fed Half Wave) is used primarily on 80m but is also useful on 40m and 20m. Using a tuner to obtain a low SWR on the higher bands protects the radio from high SWR but does not imply that the antenna is useful on those bands.

Mallory experienced a hitch in the construction though. Her first build did not function as expected and she asked for ideas on what to look for to resolve the problem. It turned out to be the connections to the polyvaricons that were the problem. Polyvaricons often have several sets of vanes and multiple connection points. I had used a capacitance meter to identify the correct connections in my original build. Realizing this may be the problem, Mallory quickly identified the correct connections and got her tuner working. She wrote that she was able to achieve a nice low SWR on all bands from 20m to 10m with her 71ft EFRW and 9:1 unun. A great result.

But Mallory doesn't need to cover her version of Old Barebones with a hat to disguise its appearance. It is a beautiful design built into a custom 3D printed case with 3D printed knobs and looks terrific.



If anyone else is interested in building this simple construction project Mallory has kindly provided links to an online source for the parts and the 3D print files:

- Polyvaricons: <https://a.co/d/hOYgP2f>
- Toroids: <https://a.co/d/7mltRXw>

- Magnet wire: <https://a.co/d/ffqdHo9>
- BNC posts: <https://a.co/d/5mwLEVI>

Here is a link to the 3D print design of the knobs: <https://www.thingiverse.com/thing:3035549/files>

Here is a link to the file to 3D print; it's a print profile (modification) from the original designer of a customizable enclosure box: <https://makerworld.com/en/models/2002942-custom-enclosure-box#profileid-2400746>

A note on the use of Old Barebones

I designed Old Barebones for use with my QRP Labs QMX transceiver which has a convenient "Tune SWR" feature that reduces the output power to 25% to reduce the stress of high SWR on its delicate finals during the tuning process. I have also used Old Barebones with my Yaesu FT-817 but I manually reduce the power to 1 watt or less during tuning. If using Old Barebones with any radio that does not have an SWR indicator I recommend incorporating an SWR indicator in the tuner circuit similar to the original Norcal BLT design.

Polyvaricons?

The word "polyvaricon" is presumably a contraction of "Polymer Variable Condenser" meaning a plastic enclosed variable capacitor using a plastic dielectric. It is believed to be the trademark of a Japanese company that manufactures these devices. But shouldn't it be called a "polyvaricap". I remember back in the dawn of my existence that capacitors were called "condensors" but that term disappeared a long time ago. Strange old world.

What is a Z-match?

"Antenna tuners" are often named after their topology. For example, an L-match comprises a series inductor or capacitor and a complementary parallel capacitor or inductor. The combination of inductor and capacitor forms an "L" shape. However, there is no immediately apparent "Z" shape to the components in a Z-match, so I presume the "Z" refers to impedance. Let me know in the [comments](#) if I am wrong.

Pros and Cons of the Z-match

From the GQRP organization in the UK:

Advantages of the Z-Match

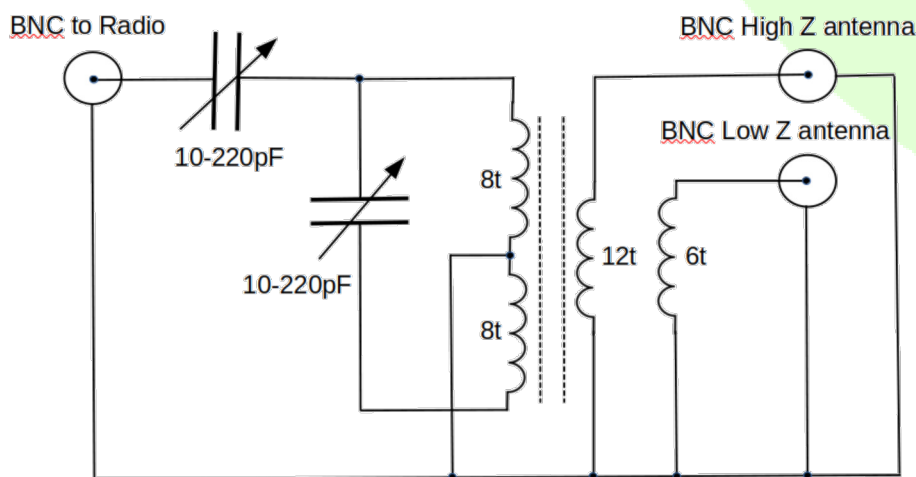
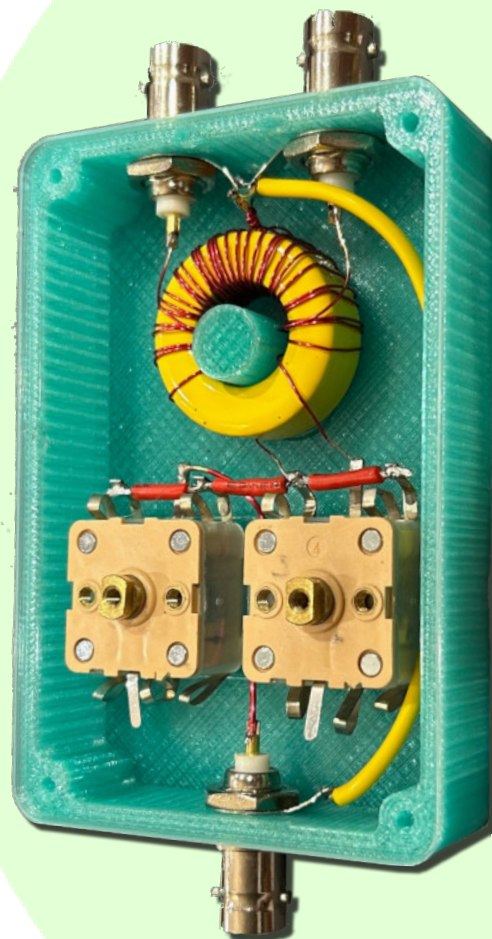
- Matches balanced loads without the use of lossy baluns.
- Being parallel resonant circuit, the Z-match can provide some band-pass filtering for your receiver and harmonic attenuation for your transmitter.
- A well-designed Z-match tuner has a high Q and is more efficient (less lossy) than other types of tuners.
- The fixed inductor simplifies construction (no switches or rollers needed).

Disadvantages of the Z-Match

Tuning is usually very narrow and can be a bit touchy sometimes to tune up

Thanks again to Mallory KD5ZZU for sharing her build with Ham Radio Outside the Box and congratulations Mallory for turning my original inelegant build into something with class!

~ John VA3KOT



"Old Barebones" QRP Z-match

The ultimate rebuild of an ancient Yaesu FT-817

by JOHN CORBY VA3KOT



Assembled rebuilt FT-817 portable operations rig.
The battered, field protective canvas pouch on the right contains a Talentcell LiFePO4 battery.

I think it was a couple of years ago now I ordered a QRP Labs QMX transceiver. It quickly, but temporarily, became my favorite radio for portable field operations. I have written before about why I believe the QMX is a mighty fine piece of miniaturized technology but is less suitable for the rigors of being operated in the kind of field operating environment to which I expose my radios. My QMX is the low-band version and I also miss the opportunity to explore the higher bands when propagation conditions permit.

What's a poor Ham to do?

I could buy another QMX, but order the high band version this time. It would be a very modest investment, but would still require

ruggedizing. Another downside is the long, long wait time betwixt ordering and receiving the tiny parcel from Turkey. I could also order a QMX+ which is a fine all HF band radio, but then what to do with the QMX low band? There is another solution.

The Paranoid Android

I recall a quote from the book “The Hitchhikers Guide to the Galaxy” by Douglas Adams in which the perennially depressed robot “Marvin the Paranoid Android” moans: “The first ten million years were the worst.” When I look at the front panel of my ancient Yaesu FT-817 non-ND version it kinda has a Marvin look about it. It has spent almost a quarter of a century waiting patiently in a drawer for the day when it might be called into

action again. Many radios have come and gone during that time but - even though I had planned to sell it on many occasions - I still own it and it's day to see the sunshine again has finally come.

Where are the features?

The non-ND version of the FT-817 is a barebones rig. I needed a CW memory keyer - it doesn't have one. Activating a POTA park sometimes requires great patience and many, many CQs. My QMX at least has that covered. I also needed an audio filter. It used to be possible to buy a Collins mechanical filter but they are no longer made. My QMX also has that feature covered, but the FT-817 requires an external audio filter.

Failure is not an option

The FT-817 does have a higher level of ruggedness than the QMX. With a few extra precautionary measures it can be protected from the ingress of sand particles during a beach activation, or unexpected spray from waves on the shores of the Great Lakes. The QMX will not tolerate wide variations in DC supply voltage; the FT-817 has that covered. The QMX uses inexpensive but fragile PA transistors (mine have not succumbed to failure - yet). Well, the FT-817 also had fragile PA transistors in its early days and mine did indeed fail during a field deployment. The FT-817's PA board is a small module that is easily replaced with the new upgraded module - as was mine.



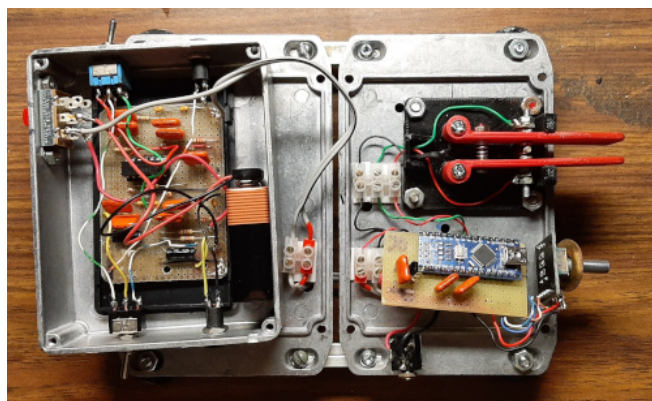
Right hand side view of the "helper modules" showing the input jack for connecting a cable from the headphone output of the FT-817. The switch allows the K4ICY AF filter to be bypassed for a barn door wide audio bandwidth.



Left hand side view of the "helper modules" showing the switch allowing selection of 2-stage or 4-stage audio frequency filtering. To the right of the switch is the AF output jack for connecting headphones. The jack on the K3NG keyer connects to the "Key" jack on the FT-817.



On the back of the AF filter module is the power switch controlling the internal 9-volt battery (now replaced by a buck converter) which supplies both modules.



Internal view of the keyer module and the filter module. The 9 volt battery has now been replaced with a buck converter that converts the radio's DC supply from 12.6 volts down to 9 volts to power the helper modules.

I get by with a little help from my friends

The feature shortcomings of the FT-817 have been overcome with two “helper modules” assembled inside aluminum Hammond project enclosures. The front enclosure contains a K3NG Arduino nano based CW keyer and a very simple no-thrills set of 3D printed paddles. Well who really needs to spend \$300 on a fancy set of paddles for a brief POTA exchange? These paddles get the job done FB. The same cannot be said about the fist that operates them!

The front panel controls are very simple. The paddles protrude through a cutout in the Hammond enclosure.

Beside the paddles is a knob. This knob is used to operate a rotary encoder inside. Clicking the knob operates the switch built into the rotary encoder and triggers the sending of a “CQ CQ POTA de VA3KOT VA3KOT k” stored message in the Arduino keyer.

Rotating the knob adjusts the speed of the CW over a wide range. I have found this to be a very useful feature. I usually send at 20wpm and receive responses that are slower and faster than my sending speed. With this prominent control front-and-center I can quickly adjust my sending speed to suit.

I built the K4ICY audio frequency filter module around a quad op-amp DIL chip. This is a very simple circuit that provides 2 or 4 stages of filtering to narrow the bandwidth of a received signal. Each stage contains identical components whose values are selected according to the operator’s desired sidetone frequency. The whole module can be bypassed if required allowing an audio bandwidth wide enough to pass a crosstown bus sideways.

Both modules are rigidly secured to each other using two aluminum rails made from scrap material. I hoard scraps of metal, plastic and other materials - you just never know when you’re gonna need ’em.

The dimensions of the two modules provide an ample flat surface on which to mount the ancient, but revered, transceiver. I purchased some “peel & stick” Gorilla brand “Slipstick” gripper pads and applied four of them to the base of the FT-817. This is a genuinely useful product I recommend to any hambrewer. The radio has been secured to the top of the helper modules with two [woodland zip ties](#) made from thin cordage. These simple cord fasteners work just as well as plastic zip ties and can be easily undone for servicing the modules.

I purchased a box load of these Hammond enclosures at an auction many years ago. They have proved very useful. In another build, using the same enclosures configured in an identical manner, I was able to construct two battery modules each containing four 18650 Lithium Ion batteries in 4S1P configuration for powering another one of my ancient QRP transceivers.

This is not the first time I have revived my FT-817, but previous rebuilds were clumsy. It is one thing to put together multiple modules on the shack bench. Clumsy, cluttered, loose modules might work in a picnic-tables-on-the-air type activation. But would it work in a situation where there are no convenient surfaces to mount the equipment; where - at any moment - we might be politely asked to vacate the area by a hungry bear looking for a space to eat his lunch? This new build is a grab-and-go package that works in small, tight spaces - even on top of a rock in the backcountry - and that’s the kind of environment where I like to operate.

~ John VA3KOT

There's a niche in Amateur Radio for everyone!

Interesting story forwarded by Kevin VE7ZD/KN7Q:

<https://www.radioworld.com/tech-and-gear/nicks-signal-spot/supercharged-ionosphere-delivers-rare-winter-dx>

Zero Retries



Rational Optimism About the Future of Amateur Radio

by STEVE STROH N8GNJ



Steve Stroh N8GNJ is the Editor of the Zero Retries newsletter (<https://www.zeroretires.org>) which promotes technological innovation that is occurring in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology.

When not writing Zero Retries, Steve experiments with Amateur Radio data radio systems in N8GNJ Labs (his shop) in Bellingham, WA,

I've been asked why I'm so optimistic about Amateur Radio? Why can I see a future for revitalized Amateur Radio... and the "sad hams" cannot?

I'm inspired and energized... and given a bit of vision... by a number of factors.

One of the biggest factors of my optimism is that Amateur Radio is a unique microcosm of the technology industry. We have access to spectrum that isn't rigidly defined (well, the repeater operators beg to differ). We have reasonably flexible rules (more flexible in Canada, but we'll be working on that factor in the US). In the US there's a flexible definition that "undefined codes" must be "publicly documented". That's all it says.

Most importantly we have talented people that want to apply their ideas and capabilities in Amateur Radio. In Zero Retries 0239 (<https://www.zeroretires.radio/zero-retries-0239/>), one story was about a work in progress called Mesh Operations Protocol (MOP) by Stefaan Desmedt KO6IKR which, yet again, reimagines Amateur Radio data communications in the VHF / UHF bands.

But there are a number of factors that are enabling (and accelerating) technological innovation in Amateur Radio in the 2020s:

DLARC - Amateur Radio's Free Online Library

With Digital Library of Amateur Radio & Communications (DLARC) (<https://archive.org/details/dlarc>), a project of the Internet Archive, funded by two grants from ARDC (see below) Amateur

Radio now has a online digital library with an astonishing amount of information about the innovation of Amateur Radio over more than a century now (literally - some publications in DLARC date back to the 1920s). I recently met with a professor of a new Electrical Engineering department and he told me that one of the biggest needs was a source of good ideas for senior projects. There are so many great ideas written up in DLARC that could easily be reimaged in this era of Software Defined Radio.

ARDC Grants

Amateur Radio Digital Communications (ARDC) (<https://www.ardc.net/>) provides grant funding to Amateur Radio projects. There have been several projects that were funded at nearly US\$1M (including DLARC). ARDC is making an amazing difference in Amateur Radio technological innovation, including funding advanced development work of IP400 - 400 MHz Mesh Network Project (<https://ip400.adrcs.org/>) of the Alberta Digital Radio Communications Society (ADRCs).

44Net - Free IPv4 IP Addresses for Amateur Radio Use

Amateur Radio Digital Communications (ARDC) is also the host organization for 44Net (<https://www.ardc.net/44net/>) which is a pool of 12M IPv4 addresses that are reserved for Amateur Radio and experimental use. If you've ever had to deal with trying to host a small web server or even a radio hotspot and get into that system from "the Internet" (especially when your Internet provider uses "CGNAT" like Starlink) you understand the value of a dedicated, unchanging static IP address. ARDC recently made 44Net Connect (<https://connect.44net.cloud/>) available - a Virtual Private Network for 44Net. Just go to the address, fill out a form, get your Amateur Radio license verified, and then you can easily use 44Net IP addresses via your existing Internet service - they are "tunneled" through the Internet via 44Net Connect.

Software Defined Radio

Some of the meaning of Software Defined Radio (SDR) has been corrupted to the point of meaninglessness - just another marketing buzzword. In this context, SDR means that the

end user can create, and change, an SDR - because it's software. With increasingly capable and approachable SDR technology, such as the Linux Handheld Transceiver (LinHT) project (<https://github.com/M17-Project/LinHT-hw>), we are now, literally in the era of when you can imagine a new radio (or new radio capability) you can sit down and write one. One of the enabling technologies of the LinHT is GNU Radio (<https://www.gnuradio.org/about/>), a free and open-source software development toolkit to implement enable various capabilities in Software Defined Radio hardware such as the LimeSDR Mini 2.0 (<https://limemicro.com/sdr/limesdr-mini-2-0/>). Programmed within its hardware constraints, GNU Radio can implement nearly anything imaginable in current radio technology.

GitHub - Sharing Knowledge via Open Source Principles

GitHub (<https://github.com/>) isn't solely used for Amateur Radio technological innovation / sharing good ideas... but it's used almost solely (in my experience) by the most interesting projects of technological innovation via Open Source sharing. One stellar example is Dire Wolf (<https://github.com/wb2osz/direwolf>), the very capable software-only Terminal Node Controller (TNC) that flexibly incorporates multiple data rates and two Forward Error Correction (FEC) systems.

Demonstrated Interest by the Public in Hobbyist Radio Networking Technology

Amateur Radio shouldn't be complacent about being the primary beneficiary for techies curious about experimenting with radio technology. LoRa technology operating on unlicensed spectrum is cheap, flexible, and amazingly capable. Meshtastic (<https://meshtastic.org/>), MeshCore (<https://meshcore.co.uk/>), and Reticulum (<https://reticulum.network/>) are all being very actively developed and deployed in large networks... with great exuberance... and no requirement for licenses.

Thus there's amply demonstrated interest in radio technology by curious techies, and Amateur Radio is the perfect vehicle for such curiosity... if we can overcome the perception that "Ham Radio is an old guy in the basement tapping on a

Morse Code key”. (There’s nothing wrong with such activity... but that’s the primary perception by the public that’s all there is to Amateur Radio.) We have to work hard to explain that we get to talk to astronauts on the International Space Station (and some day, Luna) (<https://www.ariss.org/>), we have our own microwave data networks (<https://hamwan.org/>), we put up high altitude balloons that we can track circling the world multiple times (<https://spectrum.ieee.org/explore-stratosphere-diy-pico-balloon>) and we can use our Raspberry Pi computers as radio transmitters that can be heard around the world (<https://tapr.org/product/wspr/>).

Another “bright spot” in public interest in Amateur Radio is the (slow, but noticeable) resurgence of hobbyist / student radio organizations at colleges and universities, funded by ARDC grants to upgrade infrastructure, and some coordination by the ARRL’s Collegiate Amateur Radio Program (<https://www.arrl.org/collegiate-amateur-radio>).

Internet - Linking and Sharing Knowledge

And of course, the Internet itself. Not only can we use it as a backbone when needed such as connecting widely separated systems such as AREDN (<https://www.arednmesh.org/>) microwave Local Area Networks (LANs) via AREDN’s “Tunnels” feature, but we can also use it to self-educate such as great YouTube channels like KM6LYW Radio (<https://www.youtube.com/@KM6LYW>) - home of the DigiPi project, and technical presentations such as the weekly presentations of Radio Amateur Training Planning and Activities Committee (RATPAC) (<https://www.ratpac.us/>). Some recent “Zero Retries Interesting” RATPAC seminars are FreeDV- Radio Autoencoder (RADE) Technology and AREDN Networking Software Update. Each of these are one hour seminars in advanced Amateur Radio technology, from the comfort of your comfortable chair... not in a crowded, noisy seminar room at an Amateur Radio conference. Once the RATPAC presentation is posted on YouTube, you can often download the slide deck and make notes and contact the presenter.

Artificial Intelligence (AI) - An Endlessly Patient Tutor and Helper

The headline above almost read “Coding Helper”, but I realized that definition is too limited. From my Amateur Radio perspective, I’m thrilled with the rapid evolution of AI in society because I (think...) I know a little, about a lot of things, that I’d like to be better at. But at this point in life, I’ll never be a proficient software developer, or be able to write a new SDR, or develop proficiency in 3D printing, or develop proficiency in laying out printed circuit boards (PCBs) - all of those for the potentially totally unique needs I can imagine.

For example... I’ve been a fan of the AEA PK-232 series of TNCs. They were just so gloriously 1980s “retro” - big colorful metal box, lots of LEDs and controls, etc. (A descendant unit is still available from Timewave - the PK-232/PSK (<https://www.timewave.com/support/PK-232/PK232PSK.html>)). But the original versions are now hopelessly obsolete (especially compared to Dire Wolf running on a Raspberry Pi computer like DigiPi) and often sell for as little as US\$20 at hamfests. But what if I could develop a custom PCB replacement board for a PK-232 that adapts a Raspberry Pi computer, with its myriad General Purpose Input / Output (GPIO) pins to drive the various LEDs and controls on a PK-232? I’d need software running on the Raspberry Pi to do all of that work. And I’d need some custom brackets, etc. that are 3D printed to make it all work and look nice. (In fairness, some of these sorts of updates are available from Timewave - https://www.timewave.com/a_upgrades.html).

Learning all of those skills is doable, yes. I’m not dunking on my abilities to do so. But my example with adapting a older PK-232 to, say, equivalent with DigiPi or a NinoTNC (<https://www.rpc-electronics.com/smtninotnc.php>), including driving LEDs that weren’t part of the original design of those units, would be unique.

Thus “vibe coding” the software, and a patient and cheap, but endlessly knowledgeable consultant to teach me... or even design for me... the unique things I would need to know with PCB and 3D printing design, to accomplish such a project... is empowering.

Independent Media Capabilities

One of the hardest adaptations that our Amateur Radio organizations such as RAC and ARRL are being forced to come to terms with in the 2020s is that they are no longer the primary source of information for Amateur Radio Operators about Amateur Radio. One fantastic example, that I extoll ever chance I get, is the publication you're reading now - The Communicator. I've been an Amateur Radio Operator for decades, and I can attest that the editing, subject matter, and overall design of [The Communicator](#) is stellar. But what is most amazing is that the Communicator is made available for free via the Internet to anyone on the planet that's interested in Amateur Radio. As such, it's a much better "ambassador" of Amateur Radio than the paywalled publications of RAC, ARRL, AMSAT, QRP ARCI, and many other organization's publications. The problem of those organizations protecting their publications isn't piracy... it's irrelevance. As in, publications hidden behind a "pay us first, then we'll let you look at it" paywalls are invisible and irrelevant to techies curious about Amateur Radio in the 2020s.

This was best explained with the pithy phrase quoted by Clay Shirky in his prescient essay Newspapers and Thinking the Unthinkable (<http://shirky.com/weblog/newspapers-and-thinking-the-unthinkable/>):

"When a 14 year old kid can blow up your business in his spare time, not because he hates you but because he loves you, then you got a problem."

There are now a bunch of us out there "blowing up the [publishing] business" of RAC, ARRL, AMSAT, QRP ARCI, and others with our unique media. The Communicator is just one example. Another is the amazing library of information in DLARC that's available free - such as all the issues of 73 Magazine (<https://archive.org/details/73-magazine>) and all of the old magazines in World Radio History (<https://www.worldradiohistory.com/index.htm>).

Some other examples are my newsletter, Zero Retries (<https://www.zeroretries.radio>), focused on technological innovation in Amateur Radio and Tom Salzer KJ7T's Random Wire newsletter (<https://www.randomwire.us/>) and his new EtherHam site (<https://etherham.com/>). Tom is an expert at Amateur Radio Over Internet such as connecting radio (and radio-less) HotSpots to

Internet talk groups. There are many good YouTube channels such as Tech Minds (<https://www.youtube.com/@TechMindsOfficial>) by Matthew Miller M0DQW, and podcasts such as Ham Radio Workbench (<https://www.hamradioworkbench.com/>), and news aggregators such as Amateur Radio Daily (<https://daily.hamweekly.com/>) and Amateur Radio Weekly (https://daily.hamweekly.com/_arw/) both by Cale Mooth K4HCK, and of course, there's the venerable Amateur Radio Newline (<https://www.arnewline.org/>). And of course, independent technical conferences such as Utah Digital Communications Conference (UDCC) (<https://utah-dcc.square.site/>) and the Zero Retries Digital Conference (ZRDC) - <https://www.zeroretries.radio/conference/>. Not to mention technical conferences that feature a significant Amateur Radio presence such as GNU Radio Conference (GRCon) (<https://events.gnuradio.org/event/28/>) and DEF CON (<https://defcon.org/>).

In Conclusion

I'm not a pollyanna that posits that everything about Amateur Radio is wonderful. We have very real problems that need to be addressed such as the public perception problem. Another is the migration away from actually using repeaters in favor of radio hotspots in our homes (and apartments, and vehicles, and hotel rooms)... with the result that said repeaters are now quiet almost all day, every day. We could be repurposing repeaters as "SuperNodes" for mesh networks. There are many such issues that need to be tackled with creative and energetic solutions and people.

But, from my perspective, in my work to publish Zero Retries every week, I see continuous and varied examples of technological innovation in Amateur Radio. That provides me with ample enthusiasm that Amateur Radio has a bright future, and I'm not inhibited in "going up against" the "sad hams" that are pessimistic about Amateur Radio... as I just learned that I'll be doing at the Zero Retries / DLARC table at Hamvention 2026, and Pacificon 2026, as well as ZRDC 2026.

I look forward to meeting many of you in SARC in person at the April, 2026 meeting!

~ Steve N8GNJ



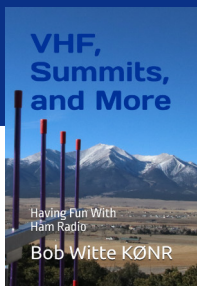
SOTA Challenge: CW/SSB on 2m & 70cm

by BOB WITTEKØNR



Bob Witte KØNR
has a great blog
site at [https://
www.k0nr.com/
wordpress/](https://www.k0nr.com/wordpress/)

Bob is author of
VHF, Summits
and More



The SOTA Management Team launched a special challenge for 2026: a distance-based scoring challenge using CW and SSB on the 2m and 70cm bands. The announcement is here on the SOTA reflector.

The basic idea is to encourage SOTA contacts using CW or SSB on these two bands. Because the scoring is based on distance, you need to enter the location of the other station. When chasing a summit, the location is already known by the SOTA database, but you need to have your location entered into the logging system. Summit-to-Summit contacts are easy to log because both locations are known. The hassle comes up when you are activating a summit and need the chaser's location. An easy way to share location info is using the 6-character grid locator (e.g., DM78av at my house). Some chasers may know their 6-character locator but you may need to look it up. I usually ask the other operator if they are operating at home so I can look up the grid later. If they are away from home, I ask for enough information to be able to determine their grid.

WOC Activity

I wasn't sure how many folks would pursue this challenge here in Colorado, but we are off to a good start. At the top of the next page is the current activator summary.

K0JJW and I have activated 5 times for the challenge, and have been pleasantly surprised with the number of chasers who get on, primarily using 2m SSB. It seems that some hams have 2m SSB capability, but don't have many opportunities to use it. So they come out to play!



2m/70cm Challenge Activator Results

SOTA is not inherently a competitive activity, it's about individual aspirations and working towards a goal at your own pace. However, it can be fun to see how your progress compares with that of others, hence we publish our Honour Roll on the internet.

Please help us to keep this page up-to-date by regularly submitting your SOTA logs.

WOC - USA - Colorado				
Position	Callsign	Total Distance (km)	Unique Summits	Points
1	KFORIG	2101	13	27313
2	KEOPWR	799	9	7191
3	K0JW	657	5	3285
≅3	K0NR	657	5	3285
5	N0BAA	533	3	1599
6	KGOAT	157	2	314
7	w0sky	256	1	256
8	N5YCO	17	1	17

There are a few things to be aware of when operating these bands and modes:

Antenna Polarization

The first thing we ran into was the need to make sure both stations have the same antenna polarization. Common practice on VHF/UHF is to use vertical polarization for FM (and similar modes), but use horizontal polarization for CW/SSB and other weak-signal modes. The serious stations on CW/SSB will tend to have large Yagi antennas, horizontally polarized. But we soon found that many of the chasers at home were using vertical antennas on CW/SSB, because that's what they have set up. No problem, on the summit we just flipped our handheld Yagi antenna to be vertical. The point is that antenna polarization should be taken into account, else you can experience a substantial signal loss.

Tuning in SSB

Another issue that surfaced is the need to do more precise tuning when using SSB. For FM, you can just dial in 146.52 or whatever and call it good. If there is a small frequency difference between stations, it does not matter. On SSB, a few hundred Hertz of frequency difference (which is common) causes the familiar "Donald Duck" effect, so you need to tune more carefully.

Most people know that the 2m SSB calling frequency is 144.200 MHz, so they start there. But if you hear an activator on 144.2001, you should tune to match their frequency when you call them. Don't just sit on 144.200 and think "the other station is off frequency."

Calling Frequency

Some sources list 144.100 or even 144.060 as the 2m CW calling frequency. These frequencies can be used, but common practice in Colorado is to

just call CW or SSB on 144.200 MHz. That way, people monitoring the band for activity can find it more easily. Same thing with 432.100 MHz on the 70 cm band. Clearly, posting spots on SOTAwatch can really help with making CW & SSB contacts.

When activity picks up, the calling frequency can get busy. This is why most radios have a big knob on the front of the radio that allows you to tune up or down. Standard practice is to move up 5 or 10 kHz, as needed. If you are operating on the calling frequency for a long period of time, you should not be surprised if other people show up on frequency. It works best if everyone cooperates, shares the frequency, and moves to adjacent frequencies when possible. This is similar to how 146.52 MHz can get busy on FM, so people shift to using 146.58 MHz to spread things out.

Quansheng UV-K5

Various people have hacked the Quansheng UV-K5, a dualband HT, to operate using CW and SSB. The modification consists of loading new firmware and, in some cases, doing a simple hardware modification. This video provides an overview of how this works. Many people are having fun modifying this HT, and it is an inexpensive way to get up and running on CW/SSB.



So come on out and give CW/SSB a try on VHF/UHF.

~ 73 Bob K0NR

The original article is at: <https://www.k0nr.com/wordpress/2026/02/sota-challenge-2m-70cm/>

KB6NU'S HAM RADIO

Operating Notes:

QRP signals, using the BK prosign, QSY protocol

by DAN ROMANCHIK KB6NU



Dan Romanchik

KB6NU blogs about amateur radio at KB6NU.com when he's not trying to figure out which way current flows. Dan teaches ham radio classes, and operates CW on the HF bands. Look for him on 30m, 40m, and 80m. You can email him at cwgeek@kb6nu.com

Does it seem to you that low power (QRP) signals are more affected by fading (QSB) than higher power signals? It does to me. If any of you know what mechanism is producing this effect, please let me know.

Speaking of QRP signals, I suggest that stations running QRP should follow the 3 x 3 protocol when responding to a CQ. By 3 x 3, I mean sending the CQing station's call sign three times, then the QRP station's call sign three times.

Several times lately, I've had a QRP station call me with only their call sign and only send it once or twice. The last time this happened, conditions were marginal, and I just wasn't able to copy the other station's call correctly. In addition to that, I'm never 100% sure that the station calling is calling me.

So, if you're replying to my CQ, please send your call three times, followed by "DE" then your call three times. It doesn't take that much extra time to send, and I'll be sure that you're calling me as well as copy your call sign properly.

QSY protocol

A couple of nights ago, I was working a station on 7028 kHz. He wasn't very strong and when another station popped up on frequency, I couldn't copy him at all. I tried calling him 1 kHz up, but he didn't follow me there.

With this in mind, I'd like to suggest the following protocol for dealing with this situation. First, tune up 1 kHz, and if the frequency is free, call the other station a couple of times. If no reply, listen 2 kHz down (1 kHz down from the



original frequency), and if the frequency is free, call the other station a couple of times.

Having an agreed-upon protocol like this might help stations reconnect when their QSO is interrupted by interference.

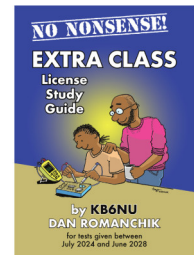
Using the BK prosign

I've noticed more stations using the BK prosign to denote that they've finished a transmission and to invite the other station to transmit. They're using this instead of the more traditional "<your call> DE <my call> K," or more simply "DE <my call> K". I think that perhaps this is catching on because this is the accepted method for POTA contacts.

I think this is an entirely appropriate thing to do. The BK prosign is well understood, and the rules say that you only have to identify every ten minutes, so you're not breaking the rules if you operate this way. And, in a ragchew, it might even be a more natural way for a conversation to flow.

I haven't started doing this during all of my contacts, but I'm starting to do this more and more. If sending BK seems natural during a contact, I'll just send it and let the other station take over. If it seems like it might be too abrupt, I might send "BTU BK" instead.

~ Dan KB6NU



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Amazingly, Ian VA7ZD had come to Home Depot for the very same home maintenance issue!

We exchanged contact information and are considering forming a "ZD" club, for all amateurs whose callsigns are suffixed "ZD".

Conicidence or Fate?

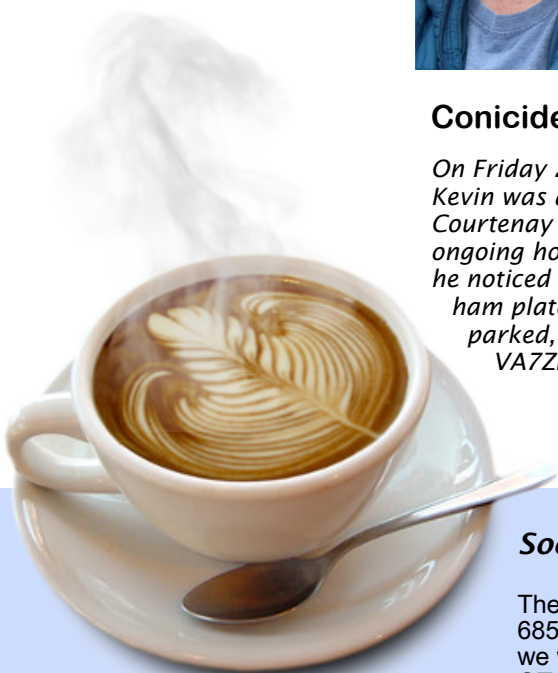
On Friday 2026.02.27, SARC's VE7ZD Kevin was driving to Home Depot in Courtenay to pick up a part for an ongoing home repair. To his surprise, he noticed this other vehicle with a ham plate in the rearview mirror. Kevin parked, the other driver parked, and both hams met for the first time. VE7ZD met Ian VA7ZD, who lives in Black Creek, just north of Courtenay/Comox.



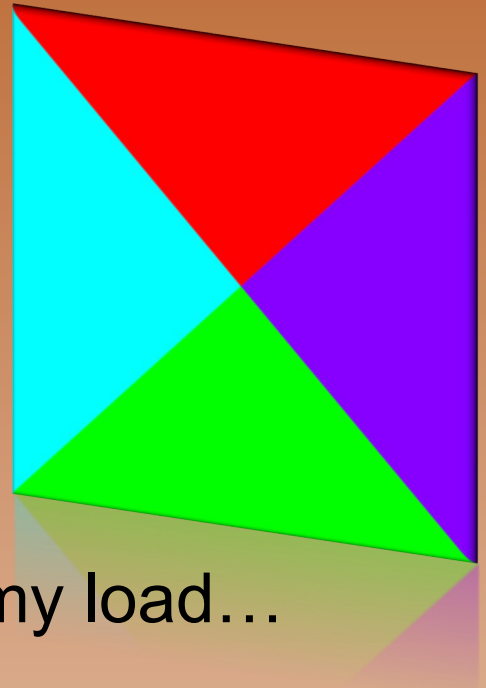
Social Reminder

The Saturday weekly social gathering is once again 'on' at the Denny's Restaurant, 6850 King George Blvd., Surrey BC from 07:30—09:30. All are invited. Afterwards, we will host workshops and will be available to invigilate Amateur Radio exams at the OTC, 5756—142 Street, Surrey from 10-noon.

Bring your ham issues, our Elmers will try to help you sort them out.



Foundations of Amateur Radio



Transmitting into a dummy load... for a year... on purpose

by ONNO BENSCHOP VK6FLAB



**Onno Benschop
VK6FLAB**

To listen to the podcast, visit the website: <http://podcasts.vk6flab.com/>. You can also use your podcast tool of choice and search for my callsign, VK6FLAB.

Full instructions on how to listen are here: <https://podcasts.vk6flab.com/about/help>

Just under a year ago I started an experiment. I set-up a beacon for WSPR, or Weak Signal Propagation Reporter, transmitting at 200 mW into a dummy load using eight bands between 80m and 10m.

I also set-up an RTL-SDR dongle, connected to an external 20m HF antenna and made it monitor 18 amateur bands between 630m and 23cm.

I left this running 24/7 for most of the year, though there were times when I detached the antenna due to local thunderstorms and there was a seven week period where there were no reports. It's highly likely that I forgot to reconnect the antenna, but I don't recall.

For this analysis I used the online WSPRnet.org database where I uploaded my spots as they were decoded. I noticed that there are reports that I have locally that are not in the database, though I'm not sure why. They're incomplete and not in the same format and merging these is non-trivial for reasons I'll discuss.

Lesson learnt, the "rtlsdr-wsprd" tool needs to be patched to output the data in the same format as is available from the online database and I need to actively log locally.

The results are puzzling, at least to me right now.

Let's start with the low hanging fruit. There are no reports of my WSPR beacon being received by anyone other than me. That doesn't guarantee that nobody heard me, just that nobody reported that they did.

In the database there's just over six thousand reports of my station receiving a WSPR transmission from my beacon during the past year.

The reports cover all bands, though not equally. The 80m band represents 6 percent of reports, where 40m accounts for 20 percent.

The reported SNR, or Signal To Noise ratio, varies significantly across the data. For example, the 12m band shows a range of 42 dB.

Digging into this does not reveal any patterns related to date, time of day, season, other band reports or any other metric I was able to imagine.

In my exploration, missing records and time-zone differences aside, I discovered that the local data does not appear to match the database.

For example I have records where the software decoded my beacon ten times in the same time-slot, but none of them exist in the database. For others, there's only one matching record, which leads me to believe that the WSPRnet.org database only accepts the first report for any given combination of timestamp, transmitter and receiver, but I have yet to confirm that.

So, let's talk about getting more than one result for a specific time-slot. As you might know, a WSPR signal is transmitted every 120 seconds, starting at the even minute. Each transmission lasts 110.6 seconds.

The decoder will make several attempts to decode multiple, potentially overlapping signals. It is my understanding that the way this happens is by essentially removing a known decoded signal and then attempting to decode what's left, repeating until either there's no more signals to decode, or time runs out, since there's probably only really 9.4 seconds in which to do this. Potentially this means that a faster computer will decode more signals, but I've not actually tested that, but it's probably something worth pursuing.

Back to our decodes. If the first decode is removed from the received data and the next decode gives you similar information, same callsign and maidenhead locator, with SNR and frequency differences, then you might imagine that there's so much of it there that the only way that might happen is because the receiver is overloaded.

I'm still looking into this, because if that's the case, then we'd need to determine if the receiver was always overloaded, or only sometimes.

It's curious, since there's over a thousand other signals being received from other stations, several over 18,000 km away, so it's not like the receiver is completely swamped.

Another hypothesis is that the decode is coming from a different band, like a harmonic. This is potentially caused because from a band and timing perspective, the receiver isn't linked to the transmitter in any way.

All podcast transcripts are collated and edited in an annual volume which you can find by searching for my callsign on your local Amazon store, or visit my author page: <http://amazon.com/author/owh>. Volume 7 is out now.

Feel free to get in touch directly via email: cq@vk6flab.com, follow on twitter: [@vk6flab](https://twitter.com/vk6flab) or check the website for more: <http://vk6flab.com/>

If you'd like to join a weekly net for new and returning amateurs, check out the details at <http://ftroop.vk6flab.com/>, the net runs every week on Saturday, from 00:00 to 01:00 UTC on Echolink, IRLP, AllStar Link, IRN and 2m/70cm FM via various repeaters.

If you'd like to participate in discussion about the podcast or about amateur radio, you can visit the Facebook group: <https://www.facebook.com/groups/foundations.itmaze>

This podcast episode was produced by Onno (VK6FLAB). You can find more at <http://vk6flab.com/>

The transmitter hammers away 24/7 one band after the next, switching every two minutes, the receiver listens for half an hour on a band, then randomly picks the next, until it runs out of bands and starts again.

The receiver is listening on more than twice as many bands as the transmitter operates on, but that doesn't mean that it cannot hear the transmitter on a harmonic of one of the bands.

Again, I don't know if this is the case, or if something else is happening. One thing I'd expect, is to see reports on other harmonics outside the bands that the transmitter is using, but I'm not seeing that.

Perhaps the overload is limited to just the band we're actively monitoring and the other signals are coming in regardless of the overload. I'm still trying to determine if that's the case.

As I said, merging the data from the two sources is non-trivial, time-zones and formatting are not the same and I'm not in the mood for manually fixing 2,500 or so records, not to mention attempting to determine which SNR is real for the multi-decodes.

So, what did I learn?

- For starters, the world didn't come to a sudden and laborious stop when I transmitted into a dummy load.
- The experiment was interesting and worth doing.
- I should test using shorter runs until I've determined the mechanisms involved. For example, one amateur suggested that I might be decoding information that's coming in via the coax, rather than from an antenna. That said, doing so would also require significantly more effort to incrementally analyse this data, so I'd have to find ways to improve my workflow.
- The SNR is all over the place, not something that I expected.
- All bands are represented in the data.
- There does not seem to be any relationship between date, time, other stations and the signal strength seen for the local transmission.
- I need better record keeping.

No doubt there's more.

If you have questions, feel free to comment.

The experiment also leaves plenty of questions.

Why do the SNR values vary so much?

I can't imagine that the variation relates to propagation, since we'd have reports from other receivers, so is it something else, even though we're talking about equipment that's indoors, are we observing variations in electronics temperatures for example?

Alternatively, if the measurements represent overload of the receiver, why don't we see other harmonics and how is it possible that we can receive and decode very weak signals from other stations?

If the signal is arriving via an unexpected path, like the coax, rather than the antenna, what could we do to stop that from occurring and what effects does it have on our current dataset, and could we account for those effects?

I suppose, leaving the ultimate question for last: Is the data that I've collected over the past year useful, beyond potentially "this is not how you do this", or is it essentially meaningless?

~ I'm Onno VK6FLAB

Seen along the road...



EG1912T to Honour Titanic's Legacy and the Heroes of the Airwaves



The Unión de Radioaficionados de Vigo-Val Miñor has announced plans for a special event station, EG1912T, to commemorate the 114th anniversary of the RMS Titanic's tragic maiden voyage. The activation will pay tribute to the 2,208 souls aboard the ship when it struck an iceberg at 11:40 p.m. GMT on April 14, 1912, an event that led to the vessel sinking at 2:20 a.m. GMT on April 15.

The special call sign will be on the air from 00:00 UTC on April 10, 2026—the date Titanic departed Southampton—until 23:59 UTC on April 15, 2026, marking the moment the ship was lost. Operators plan to be active on HF, VHF, UHF, and SHF bands, utilizing all modes with a particular emphasis on CW telegraphy.

A Tribute to the "Marconi Men"

While the event commemorates everyone aboard the ship, the organizers have a special focus on honoring the radio operators who became unsung heroes of the disaster. The activation seeks to highlight the critical roles played by Titanic's senior wireless operator Jack Phillips, his junior colleague Harold Bride, and Harold Cottam, the sole operator aboard the RMS Carpathia, whose efforts were pivotal in coordinating the rescue.

"Jack Phillips and Harold Bride were the first and second telegraph operators on the Titanic, while Harold Cottam was the operator on the Carpathia, the first ship to respond to the distress calls," the club noted. "They played leading roles in the telegraphic communications

of what became the most shocking rescue operation in maritime history."

QSL Information

Contacts with EG1912T will be confirmed via the bureau, eQSL, and Logbook of The World (LoTW). In a special nod to the mode used by the heroic

operators of 1912, all stations that complete a CW contact with the special event station will be eligible for a unique, commemorative QSL card.

The Silent Key That Almost Was

The activation also serves as a reminder of the fragility of early 20th-century technology. The Titanic's Marconi room was equipped with the most advanced wireless apparatus of the era. However, early in the voyage, the radio equipment failed. Disregarding Marconi Company policy that only company-appointed technicians could perform repairs, Phillips and Bride spent two days troubleshooting and fixing the set themselves. During that period of radio silence, while they worked feverishly to restore service, numerous warnings of icebergs in the shipping lanes were transmitted by other vessels—messages that went unheard on the bridge of the Titanic until it was too late.

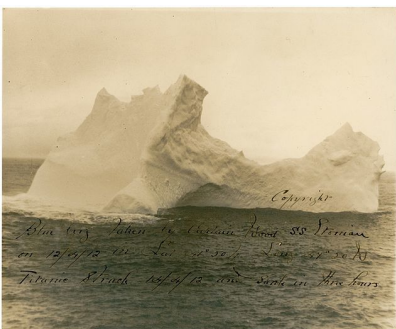
Visual History

The event is also steeped in visual history. A notable image of the Titanic before its departure from Southampton clearly shows the majestic T-antenna strung between its masts—a precursor to the antennas used by amateur radio operators today. (For those interested in the legacy of such designs, resources like www.dl8las.com/160m-tx-antenna explore how these classic concepts continue to perform in modern amateur setups.)

A photograph [left] believed to be of the very iceberg that sealed the ship's fate adds a chilling historical footnote. Taken by Captain W. Wood of the SS Etonian on April 13, 1912—just 2 days before the disaster.

As amateurs around the world tune their dials for EG1912T in April, they will not only be chasing a contact but connecting with a pivotal moment in history when the "wireless" first proved its mettle as a lifeline to the world.

~



Back to Basics

From The Canadian Basic Question Bank

Understanding End-Fed Half-Wave Antennas and Impedance Matching



John Schouten VE7TI has been teaching amateur radio courses for over 25 years, and is the Course Coordinator for Surrey Amateur Radio Communications

An important principle to impress on Amateur Radiio students is the need to ensure efficient signal transmission as a key to successful communication.

A new question from the Canadian Basic Amateur Radio Qualification exam (question B-006-006-003) asks: "An end-fed half-wave antenna (EFHW) has a very high feed point impedance. What device could be used to provide a good match to 50-ohm coaxial cable?"

- A. A quarter-wave stub
- B. A counterpoise
- C. A good ground on the coax shield
- D. A transformer

This topic opens the door to fundamental principles of antenna design and impedance matching, essential for hams optimizing their setups. First, let's break down what an EFHW antenna is. An end-fed half-wave antenna consists of a wire that's approximately half a wavelength long at the operating frequency. For example, on the 20-meter band (around 14 MHz), this might be about 10 meters of wire.

Unlike center-fed dipoles, which are balanced and fed in the middle where impedance is low (around 72 ohms), the EFHW is fed at one end. This end-feed point coincides with a voltage maximum in the standing wave pattern on the antenna, resulting in a very high impedance—typically 2,000 to 5,000 ohms, often around 2,450 ohms for a resonant half-wave.

Why such high impedance? Impedance in antennas is the opposition to alternating current flow, combining resistance and reactance. In a half-wave wire, current is minimal at the ends (current nodes), while voltage peaks there. Feeding at this high-voltage, low-current point creates the mismatch. This is great for portable or stealth setups, as EFHWs can be deployed as slopers, verticals, or inverted-Vs with minimal ground requirements, making them popular for QRP (low-power) operations or multi-band use with harmonics (e.g., a 40m EFHW works on 20m, 15m, etc.).

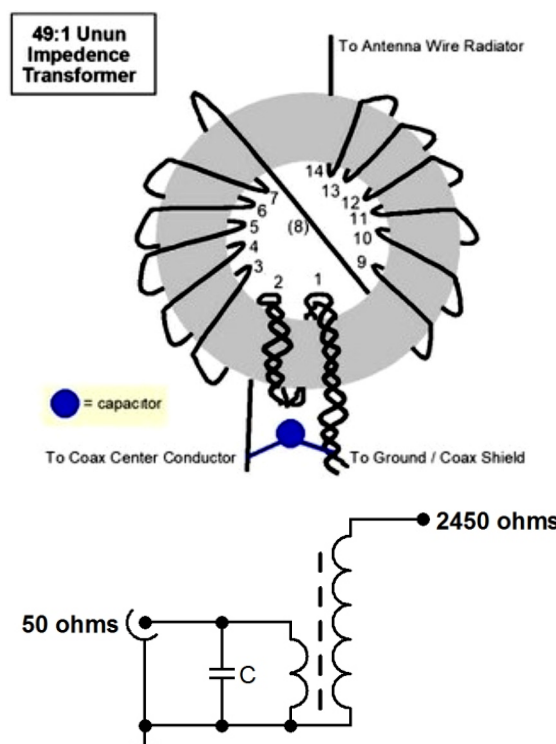
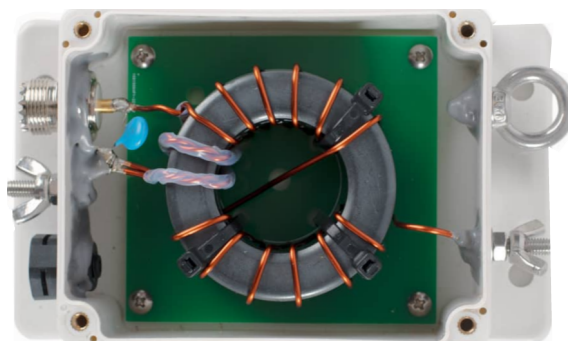
However, most amateur transceivers and coaxial cables, like RG-8 or RG-58, are designed for 50-ohm systems. Connecting a high-impedance EFHW directly to 50-ohm coax leads to severe mismatch. This is quantified by the Standing Wave Ratio (SWR), which measures reflected power. An ideal SWR is 1:1; anything over 2:1 can cause power loss, overheating, or even damage to the radio. For an EFHW, the SWR could exceed 50:1 without matching, wasting energy as heat or reflections.

Enter impedance matching: the process of transforming the antenna's impedance to match the feedline's, maximizing power transfer. While antenna tuners (using inductors and capacitors) can adjust mismatches dynamically, they add complexity and loss. This exam question highlights a straightforward solution—specifically, an unbalanced-to-unbalanced (unun) transformer. How does it work?

Transformers use electromagnetic induction via coiled wires on a core (like ferrite toroids) to step up or down impedance. Impedance transformation follows the square of the turns ratio. For an EFHW's ~2,450 ohms to 50 ohms, the ratio is $\sqrt{2450/50} \approx 7$, so a 49:1 ($7^2:1$) transformer steps it down. Wound with, say, 14 turns on the secondary (50-ohm side) and 2 turns on the primary (high-impedance side), it's compact and efficient for HF bands. Adding a small capacitor can fine-tune resonance, but the transformer handles the bulk. In practice, hams build or buy these for under \$50, enabling broadband matching without constant retuning.

Familiarity with EFHW and matching principles empowers operators to experiment confidently and without unnecessarily risking their equipment.

Whether for emergency comms or DXing, a well-matched antenna turns theory into clear signals. Remember, always measure SWR post-installation for optimal performance.



So, the correct answer to our question: “An end-fed half-wave antenna (EFHW) has a very high feed point impedance. What device could be used to provide a good match to 50-ohm coaxial cable?” is a transformer.

~ John VE7TI

Twelve Safety Laws for Amateur Radio Operators

by David Okrent W7DAO

1. **The Law of Self-Misperception:** You may think you're an 18-year-old, but your body may be much older, out of shape, less flexible, and more fragile; therefore, ask for help or hire someone.
2. **The Law of Pre-Action Comprehension:** Prior to working with any device, machine, or the like, read the entire manual before starting any action. Additionally, do read and adhere to warning stickers; despite what you think, they are addressed to you.
3. **The Law of Short Cuts:** Taking a short cut with respect to safety is assuming the role of a fuse in circuit.
4. **The Law of Situational Discernment:** Before starting to act, take a breath, clearly see the situation and potential hazards, size things up, understand your limits, think it through, give it another thought, prepare, and then act.
5. **The Law of Negative Dexterity:** Anything that could slip out of your hand(s) will do so in a way and at a time that directly or indirectly will damage the item and/or some other critical piece, cause an injury to you or someone else, and/or be lost and end operations. Assume droppage will occur and prepare accordingly.
6. **The Law of Achieving a Ground State:** What goes up, including you, has the potential to come down in an uncontrolled fashion. Take precautions to prevent the ground from suddenly rushing up to meet you.
7. **The Law of Extraneous Warning:** If a little voice in your head, an associate, or spouse says, "don't do this, that's going to hurt, or are you sure you know how to do this," then immediately step back and think about this and, at the least, add safety equipment.
8. **The Law of Confirmation:** When working on a circuit or machine, assume it's energized or pressurized until you have confirmed its status yourself.
9. **The Law of Attraction:** When one sees a button, switch, knob, object, or slider, he/she will be tempted to interact with it (to touch, move, or press it), even if it's big, red, and has lots of warning labels on and around it. Fight this urge, step away, and read the manual (see #2), get advice, and refer to Rule #4.
10. **The Law of Protective Equipage:** Safety equipment exists for a reason. You're the reason, get it, and use it. Yes, you're invincible but use it anyway, it sets an example to those more fragile than yourself.
11. **The Law of Painful Discharge:** Unless you safely discharge a capacitor yourself or witnessed it, especially large ones, assume it's waiting to painfully utilize your body to return it to a neutral state. Additionally, after discharging a high voltage or large capacitor place a shorting wire across its terminals when it's out of circuit.
12. **The Law of Negative Evolution:** A warning, safety, or caution label is not open to interpretation or testing, do what it says. For example, if a label states "HOT, Do Not Touch" don't touch the item to determine if it meant thermally or electrically hot (this really happened). Doubting, questioning, or testing the accuracy of a warning label, or disregarding one of these laws can result in your sudden or slow painful absence from the gene pool.

~ David A. Okrent W7DAO

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Additionally, see Rule #4.



No-ham Recipes

Avocado Salsa

by GLENNA BARRON VE7DSC

Serve over cooked chickpeas, on toasted crusty garlic bread, or as a dip for pita bread and other breads and fresh veggies. Add to veggie burger sandwiches to add some taste excitement!

For those of you new to soy yogurt, it is a dairy-free yogurt made from fermented soybeans and a few other simple ingredients. Try several brands; some are much better than others.

- 1 medium tomato, peeled and diced
- 2 teaspoons (10 ml) red onion, finely minced
- 2 teaspoons (10 ml) fresh cilantro leaf (coriander leaf), coarsely chopped
- ½ hot banana pepper (hot!) or red Bell pepper (not hot), seeded and chopped
- 1 medium clove garlic, finely minced or put through a garlic press
- ½ avocado, peeled and chopped into very small cubes
- ½ cup (125 ml) unsweetened, plain soy yogurt or unsweetened, plain dairy yogurt
- ¾ cup (200 ml) English cucumber, diced
- ½ large lime or lemon, juiced

In a bowl, whisk, the lemon or lime juice and soy yogurt (or dairy-based yogurt) until well mixed.

Add the garlic, onion and cilantro to the yogurt mixture and whisk until well mixed.

Add the tomato, cucumber, banana pepper and avocado to the yogurt mixture. Mix gently until all vegetables are coated with yogurt mixture. Adjust to seasonings to taste. Cover and refrigerate until needed. Makes 1 cup (250 ml).





March 2026

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
1972: Intel introduces 8008 processor	SARC Basic Course 1897: Marconi granted first wireless patent	1930 SEPAR Net 2000 SARC Net	1910: DeForest experimental radio broadcast from Met, NY	1927: Federal Radio Commission holds first meeting		Coffee: 0700 Denny's King George Blvd. & 68 Avenue ARRL International DX Contest (SSB) 1876: Bell receives U.S. patent for telephone
8	9	10	11	12	13	14
ARRL International DX Contest (SSB)	SARC Basic Course	1930 SEPAR Net 2000 SARC Net 1876: Bell successfully transmits by telephone	SARC General Zoom Meeting 1900-2100			Coffee: 0700 OTC Open 0930 : Commonwealth Contest (CW)
15	16	17	18	19	20	21
Commonwealth Contest (CW) 1679: Gottfried Wilhelm von Leibniz describes binary numbering	SARC Basic Course Review	1930 SEPAR Net 2000 SARC Net SARC Basic Course Exam		1918: Standard Time Act establishes Standard and Daylight time in the U.S.	1902: Nathan Stubblefield demonstrates ship-to-shore broadcast to multiple receivers in Washington, DC	Coffee: 0700 OTC Open 0930 SARC Basic Course Exam
22	23	24	25	26	27	28
		1930 SEPAR Net 2000 SARC Net	SARC Directors Meeting 1900-2100		1899: Marconi transmits across English Channel	Coffee: 0700 OTC Open 0930 CQ WW WPX Contest (SSB)
29	30	31				
CQ WW WPX Contest (SSB)		1930 SEPAR Net 2000 SARC Net	Event details: SARC—SEPAR 'Live' calendar link All contest information: WA7BNM Contest Calendar: Home			



April 2026

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
Event details: SARC–SEPAR ‘Live’ calendar link All contest information: WA7BNM Contest Calendar: Home					1973: Martin Cooper of Motorola makes the first public cell phone call.	Coffee: 0700 Denny's King George Blvd. & 68 Avenue
5	6	7	8	9	10	11
	SARC Basic Course 1875: Bell granted patent for multiple telegraph	1930 SEPAR Net 2000 SARC Net	SARC General Zoom Meeting 1900-2100	1860: Edouard-Leon Scott de Martinville invents the phonautogram to record sound	EG1912T Titanic Special Event Station	
12	13	14	15	16	17	18
EG1912T Titanic Special Event Station						Coffee: 0700 OTC Open 0930 IARU World Amateur Radio Day
19	20	21	22	23	24	25
ARRL Rookie Roundup (SSB) 1928: Harry Nyquist publishes Nyquist Sampling Theorem 1965: Gordon Moore describes Moore's Law	SARC Basic Course 1961: FCC authorizes FM stereo standard	930 SEPAR Net 2000 SARC Net				Coffee: 0700 OTC Open 0930 1874: Guglielmo Marconi born 1791 Samuel Morse born
26	27	28	29	30		
	SARC Basic Course		SARC Directors Meeting 1900-2100			

Radio-Active

Profiles of SARC members

Andy Carr VE7SNF

presented by BLAKE R. WIGGS VA7BWG



Andy VE7SNF and friend

A lifelong tinkerer with a deep curiosity for how things work, this amateur radio operator brings a hands-on, mechanically minded approach to the hobby that reflects decades of professional experience and personal exploration.

Family & Personal Background

Married for over 30 years to Pat, VE7ZCA, radio has become a shared pursuit in the household. Their daughter Meghan works as a biologist for the federal government, and their son Ryan is an IT contractor. While neither is licensed (yet), both have shown interest, and the entire extended family received GMRS radios recently—a subtle but promising nudge towards the amateur radio hobby.

Education & Career

Dual-ticketed as a Red Seal Automotive Mechanic and Heavy Duty Mechanic, Andy retired in 2024 after a long and varied career. After holding multiple jobs as a teenager, he became a co-owner of a construction company building spec homes. That ended with the 1981 housing crash and Andy found himself back in the automotive field working as a technician for an automotive air conditioning company for 2 years before beginning his apprenticeship with a GM dealership. After completing his automotive apprenticeship, Andy spent 2 years as a Snap-On Tools dealer and subsequently spent a further 2 years as a Snap-On technical representative. Then,



following a brief stint as an automotive instructor at BCIT, Andy landed in UBC's Fleet Maintenance Department where he spent 24 years, ultimately retiring as Head Mechanic. He savours retirement mostly for what it lacks: the daily commute from Surrey out to UBC and back!

Path into Amateur Radio

Andy's fascination with mechanical and electrical systems began early. A keen desire to understand how things work resulted in many disassembly projects—not always followed by successful reassembly. His budding interest in amateur radio sat on the back burner for some years due to other priorities, and it was Pat who ultimately discovered the Delta club's Basic course and suggested that they take it together. Both earned their licenses, with his achieved at the Honours level. A year later, Andy completed his Advanced qualification through the RAC course.

Amateur Radio Interests

Andy serves as one of SARC's NCOs and reports really enjoying that experience, which he says has given him the opportunity to get to know a lot of people better. He says that he has learned a lot thanks to his on-air interactions.

Andy's equipment list is extensive—and growing!

He uses a Yaesu FT-736R for VHF/UHF side band work and plans to erect a horizontal antenna for weak signal work. He has a 23 centimeter (1.2 GHz) module and a Yagi antenna for the FT-736R. He plans to remove the 6-meter module from the FT-736R and replace it with the 23 cm module. Andy finds that the 40+ year-old FT-736R still outperforms many modern rigs in receive and transmit quality.

He has several 1.25-meter (220 MHz) radios and loves working that band. He also has an Icom 7300 base station as well as a recently acquired Xiegu G90 portable HF radio. He is currently assembling antenna gear for portable work.



He recently acquired a pair of D-Star capable Icom 51As. In late January Pat and Andy used them to complete multiple “very clear” digital simplex QSOs over 2.4 kilometres (between the tip of Green Timbers park in Surrey and their house south of the park). Andy is looking forward to playing with D-Star on the 51As. He likewise enjoys playing with Meshcore.

Andy pronounces himself a newcomer to the HF bands but he has jumped right in, having acquired a straight key and practice keyer. He admits to some procrastination in signing up with the Long Island CW Club.

Andy has Winlink Vara FM working reliably on an Alinco DR-735 with a Masters Communication sound card. He’s setting up an interface with a Digirig Mobile for his go box so he’ll have digital modes capability. He reports having just started attempting to install several digital modes in his shack and is looking forward to playing with those as well.

Beyond the Shack

Outside of radio, Andy’s dedication to dog training and behaviour is remarkable. For over 16 years, he has volunteered with the SPCA and related organizations, developing scent detection enrichment programs, fostering and training fearful or aggressive dogs, and earning multiple professional certifications. He competes and judges at the elite level in scent detection trials and currently works with two dogs, Boomer and Rubix, while coaching roughly 30 scent detection teams weekly over the past decade.

Other pursuits include blacksmithing, welding, metalwork, lathe work, and “aspirational” woodworking (he professes excellence at producing sawdust). He is also a committed Linux tinkerer and computer builder, having not purchased a new computer since 1988—preferring instead to build or rebuild systems from salvaged components.

Club Involvement & Emergency Communications

An enthusiastically active SARC/SEPAR member, Andy values the club’s social culture and members’ willingness to share their knowledge. He has volunteered for multiple public service and emergency communications events, gaining firsthand insight into the real-world challenges of emergency preparedness. His only complaint? The club’s dangerous tendency to encourage ever deeper exploration of the hobby’s many rabbit holes!

On-Air Highlights

- Most memorable QSO: listening to a Japanese and an American operator discover their shared history and seamlessly switch to fluent French mid-conversation
- Remote operation: making HF contacts from Malcolm Island using an IC-7300 and an EFHW, and meeting a local ham for an impromptu shack visit
- Ongoing delight in the “magic” of radio—especially when inexpensive HTs outperform expectations alongside formidably expensive high-end equipment

Advice for New Hams

“Get involved with a club and dive in.”

Final Thoughts

Andy is grateful for the people, the mentorship, and the community; he considers himself fortunate to be part of SARC and the broader amateur radio world—a hobby that continues to surprise, challenge, and connect in ways few others can.

~ Blake VA7BWG

SURREY AMATEUR RADIO basiccourse

OBTAIN YOUR FEDERAL AMATEUR RADIO CERTIFICATE

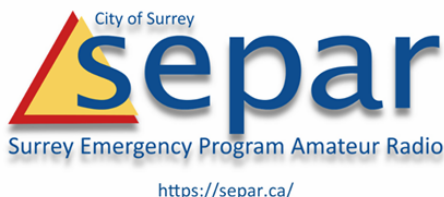
8-WEEKS · ON-LINE · \$80

Next course starts Monday, April 6 — contact sarc@ve7sar.net

Includes classes, a comprehensive manual, videos and the exam fee



- Ideal for outdoors activities. Long range communications anywhere for free without commercial infrastructure
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- Enhance your personal and your community's preparedness in an emergency
- Use a radio, computer, smartphone or tablet for free worldwide digital communications
- Practice an exciting hobby or start a career opportunity





The Contest Contender

BC QSO Party Report

Focus on BC

by DOUG JEFFREY VA7JDJ



Doug Jeffrey VA7JDJ
reporting on SARC's
contesting efforts

For those of you who are not familiar with the expression QSO party, it is an amateur radio operating event where stations in a specific geographic area become the “featured” contacts for everyone else. The goal is to make as many QSOs as possible—both within the region and with operators outside it—while making a simple contesting exchange. In the BC QSO Party (BCQP) the focus is on making contact with stations in BC, which makes for a very busy time if the band conditions are favorable. Extra points are available for contacts in Canada and for making contact with the event’s sponsor club.

The BCQP is sponsored by the Orca DX club who set the rules and promote this event. This year the

contest ran from 8AM - 8PM local time on Feb 7th and from 8AM - 4PM on Feb 8th. We had a full schedule of operators including a good mix of voice and CW operators. The schedule was set and we waited for the start time knowing that stations in BC would be sought out by operators trying to make high value contacts with stations in BC. From our side we were also aware of the QSO parties running at the same time in Minnesota and Vermont so we prepared our exchanges in case we crossed paths with people in those contests during our operating times.

Conditions turned out to be good to very good and there was lots of activity for us to engage with. Overall, the team make 1017 contacts working on the 10m, 15m



70.20 QSO/hr
Fastest: 94.00
QSO/hr

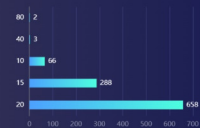
1 day 7 hrs

2026/02/07 16:00:38 UTC -- 2026/02/08 23:58:51
UTC

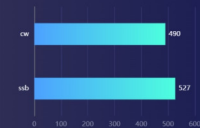
1017 QSOs

Total Contacts

5 Bands | Top Band: 20M



2 Modes | Top Mode: SSB



14 DX Entities

American Samoa(2), United States(802), Japan(9), Alaska(7), Canada(179),
Chile(2), Fed. Rep. of Germany(1), Namibia(1), Puerto Rico(1), Hawaii(1),
Italy(2), Haiti(1), Uruguay(1), Brazil(6)

15,649.3 km

Longest Contact: ZV8PA

62 States/Provinces

AB, AK, AL, AR, AZ, BC, CA, CO, CT, DE, ER, FL,
GA, IA, ID, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI,
MN, MO, MS, MT, NB, NC, ND, NE, NH, NJ, NL, NM,
NS, NT, NV, NY, OH, OK, ON, PA, PE, QC, SC, SD,
SK, TN, TX, UT, VA, VT, WA, WI, WV, WY, YT

SURREY AMATEUR RADIO COMMUNICATIONS



and 20m bands. 490 contacts were by CW and the remaining 527 were on SSB. Although this contest has no extra points for DX contacts, we did manage to connect with 14 DX entities. Someone even made a contact with Namibia with a distance of over 15000 km!

Thanks to Mike VE7YEG for organizing our group and to John VA7XB, Scott VE7KAT, Erika VA7ISI, Stan VA7NF, Doug VA7JDJ, Steve VE7SXM, John VE7TI, Dino VE7NX, Dmitry VA7DVO, Sheldon VE7SRF, Slawa VE7LWW and Larry VE7LXB for making VE7SAR's presence felt during this contest!

~



ARRL DX Contest (CW)

This 48-hour contest on the weekend of 21/22 February is unique in that it allows North American stations to work only DX so there is stiff competition for the rare ones. The most successful participants are on the East Coast with shorter hops over the ocean to EU, whereas propagation is over the poles for us.

Eight CW operators (Dino VE7NX, Dmitry VA7DVO, Jan VA7VJ, John VA7XB, Les VA7OM, Sheldon VE7SRF, Slawa VE7LWW and Stan VE7NF) showed the VE7SAR flag in this weekend-long DX contest, making 1139 DX contacts in 95 countries.

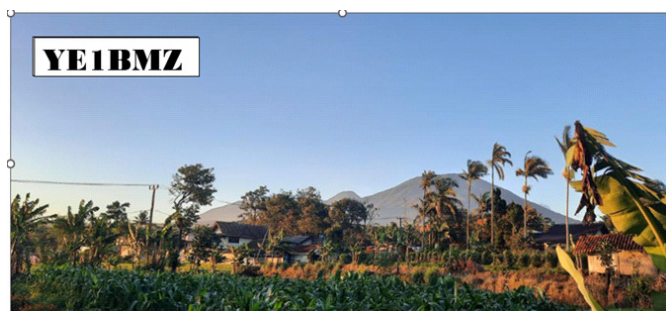
Conditions were good on Saturday into Indonesia, Europe, Asia, Oceania, South America and the Caribbean but deteriorated dramatically on Sunday. African stations, other than the offshore





Here are just a few of the noteworthy contacts: YB2VSH in Indonesia, ZD7BG in St. Helena, HD8R in Galapagos, A52R in Bhutan, E29TGW in Thailand, P3X in Cyprus and SV1ME in Greece. We had one serious equipment issue, which was the audio level on the IC-7610 intermittently dropping in and out on RX. The consensus is that this may be a sticky TX/RX relay, but further diagnosis is required to confirm it. Also, every contest reminds us of the need to improve our 80/40 wire antenna.

A vibrant night scene of the Curacao Marriott Resort & Casino. The image shows a row of colorful, illuminated buildings in shades of blue, orange, and green. A large globe sculpture is visible on the right. The text "PJ4/WD8R" is overlaid in a stylized font at the top, and "Curacao" is written below it.



100 | March - April 2026

Friends Remembered

In Memory of “Walt” Bond VE7WDB/VE6MW

by Anton James VE7SSD

I was asked to remember Walter Bond, VE7WDB—and later VE6MW—affectionately known as Walt, who is now a silent key. Walt passed away on Saturday, February 7, in Edmonton at the age of 81. He is survived by his wife, Lilas, and their three sons.

Walt was originally from Manitoba and, through his career, lived in many parts of Canada, including Thompson and Winnipeg, Manitoba; Greenwood, Nova Scotia; and Brampton, Ontario. For those of us in British Columbia, he entered our lives in 1994 while living in Prince George, and later in the Lower Fraser Valley when he moved to Langley in 1999.

By profession, Walt was a land surveyor and had a deep love for the outdoors. This suited him well in his role as a Scout leader and as a manager with Scouts Canada at Camp McLean, which he described as “a piece of heaven,” located at 16th Avenue and 203 Street in Langley Township. Some of us will remember attending a SARC Christmas party there.

Although Walt was not especially active or talkative on the radio, he was a steady and supportive presence in the club. He also served as our club president at one time. He supported many club activities, and I fondly remember his memorable chili cookout for Field Day at Bradner Road in Aldergrove. He also supported numerous fox hunts and Field Days at Campbell Valley Park.



Outside of amateur radio, Walt had a keen interest in the history of the BC fur trade. He was a capable photographer and a talented wood carver.

In 2005, Walt returned to Edmonton, where he acquired the call sign VE6MW. Although no longer living here, he appreciated receiving The Communicator and often asked about the club. Despite the distance, we maintained contact, as he and Lilas occasionally returned to Langley to visit their son and grandchild.

As the years passed—as happens to all of us—time and geography made travel more difficult. Walt could no longer manage the long drives from Edmonton, and we saw him and Lilas less often.

In late 2021, Walt suffered a stroke severe enough to take away his mobility, and he was admitted to long-term care. Despite this, Lilas shared that he continued to look for ways to improve the lives of others in the home, making friends and participating in many in-house activities.

Due to further complications, his health declined quickly through the fall of 2025. He lost a great deal of weight after stopping eating during his final three weeks. He was not in pain, and his passing was quiet and peaceful.

A memorial service for Walter was held on Saturday, February 21, at Bears paw Chapel in Edmonton.

Walt will be remembered for his kindness, quiet dedication, and the many ways—large and small—in which he enriched our club and the lives of those who knew him.

~ Anton VE7SSD



January
2026



SARC General Meeting minutes

January 14, 2026

Recording Secretary MIKE PORISKY VE7YEG

Attendance: 28 members/guests attended online

Start Time: 19:00 hrs. January 24, 2026

Location: Online via Zoom

Welcome & Presentation of Agenda - Steve called the meeting to order and gave a brief welcome message.

Guest Presentation

Kevin McQuiggin introduced tonight's presenter, Jim Idelson K1IR. Jim presented a comprehensive analysis of amateur radio tower safety incidents in the USA, revealing 22 fatalities in 20 separate incidents since 2003. He noted that while the rate of incidents has been relatively steady at about one per year, the problem is significant enough to warrant attention. The presentation aimed to investigate the scale of the issue and identify potential solutions to prevent future accidents.

Jim compared tower climbing and skydiving safety metrics, finding that amateur radio tower climbing has a fatality rate 4-7 times higher than commercial tower climbing and skydiving, with approximately 22 fatalities over 20 years. The main causes of fatalities include tower collapse, freefall,

electrocution, and equipment failure. Jim concluded that amateur radio tower climbing has a serious safety problem that can be addressed by implementing safety improvements to reduce fatalities and injuries.

He explained that most incidents occur during installation or removal rather than maintenance, with tower falling being the main cause during installation/removal and free fall being the main cause during maintenance. He noted that guide towers are involved in the majority of fatalities, and identified three root causes: unsafe tower conditions, lack of proper climbing equipment/technique, and unsafe maneuvers near power lines. Jim concluded that addressing these three issues could prevent 90% of tower climbing fatalities.

Jim discussed safety measures for climbing guide towers, emphasizing the importance of temporary guy wires and proper tower support during assembly and disassembly. He highlighted that most fatal incidents occur within 30 feet of the ground, stressing the need for secure attachments and inspections before climbing. Jim also explained the concept of free climbing, distinguishing it from traditional climbing practices and warning against unsafe climbing methods.



Jim reviewed safety measures for tower climbing, emphasizing the importance of 100% tie-off using full body harnesses and dual fall arrest lanyards. He explained the use of positioning lanyards and alternative safety systems like cable-based ascenders. Jim also shared anecdotes about unsafe tower maneuvers, including a tragic incident involving a family. The discussion highlighted the risks of working at height and the need for proper safety equipment and procedures.

In summary, Jim highlighted the importance of proper training and equipment. He emphasized the need for a mindset shift towards safety, noting that younger people tend to accept these practices more readily than older operators.

Business Meeting

Steve VE7SXM called the meeting to order at 20:20 following the presentation. Steve thanked Jim for an excellent presentation and invited him to stay for the remainder of SARC's monthly meeting.

1. Announcements:

Steve reminded everyone that SARC meets for breakfast on Saturday mornings at Denny's Restaurant on King George Blvd. and 68 Ave. Also, following breakfast those interested are welcome to visit the OTC to work on projects, get answers to questions or just socialize.

A soldering workshop will take place on Saturday

2. Reports

- Steve presented the agenda on screen for review and began the meeting with the following announcements:
- The DigiPi project will take place at the OTC this coming Saturday.
- If you're not getting the bi-weekly bulletin, and you would like to, contact John Brodie.

Committee Reports:

Financial Statements:

- The P&L was displayed comparing last month to the most recent printout. 2 large expenses were included this month; the Bigfoot tower maintenance expense and the RAC Insurance premium.

- Balance Sheet report was displayed highlighting the deposit/transfer of the GIC that just matured. The Saving account shows \$XXXX with some additional income from GIC interest. Also, some amounts still need to be moved across from the e-transfer account.

Nets & Website - Reg N.

- The 220 repeater is down for maintenance. Gord has the repeater and will be turning it over to Dave Cameron for repair. Gord requested a copy of the software from Horace and is checking whether the IRLP software also needs updating.
- Reg notified the members that Andrew will be stepping back from Net Control duties in order to assist John S. with the Basic ham course. Andy (VE7SNF) and Harry (VE7HVB) have agreed to take on more nets.
- If anyone else would like to be a Net Controller, contact Reg - nets@ve7sar.net

SEPAR/OTC

- Gord had a short meeting with the Fire Chief regarding the OTC contract. He supports SARC's activities. Gord is still waiting to receive clarification.
- The HF antenna has been repaired and will be re-installed at Firehall #1. Steve will order a replacement antenna controller for the Hi-Q. The estimated cost is \$300 USD.

Membership - John B.

- Two new members signed up the last couple of weeks, bringing the total membership to 148.

Contests - Mike P.

- The only contest on the agenda is the BC QSO party scheduled for Feb 7-8. This is an SSB and CW contest and due to its popularity, a full turnout is expected. The email notice will go out approximately 10 days before the start.
- No plans have been made for Winter Field Day, but if anyone is interested in setting up for the weekend and operating as VE7SAR, the log files will be submitted.
- In mid-February, the ARRL International DX Contest (CW) will take place. Again, an email requesting operators will be sent out to CW contesters prior to the start date.



Basic Class - John S.

- The new course is scheduled to start in just 2 weeks with 60+ students signed up so far. Four to Five more may join before the first class starts.
- Only a few sessions remain to be finished. Everything should be ready to go before the first class.
- The GOTA workshop will be left until the end of the course so that graduates have time to purchase a radio.
- Due to the number of students, it is likely that 2 antenna workshops will be required.

Old Business

Future Presentations:

- The next monthly meeting will take place online, via Zoom. The presenter will be Greg Mihra KJ6ER who will speak about his POTA antennas.
- The Flex radio has been moved back to the OTC and is available for remote access by qualified members. Anyone interested in operating the Flex radio remotely should contact Steve M. for instructions. More information can be found on SARC's website - ve7sar.net
- Bigfoot Repairs were completed, however during re-assembly the repair shop noticed a bearing that also needed replacement. The part was ordered at no cost to SARC. The antenna should be ready in a couple of weeks.

New Business

- John S. gave the membership an introduction to a proposed "Chameleon" project, where hams are encouraged to step out of their comfort zone and try new activities. Members were challenged to get involved with a new part of the hobby in 2026. Anyone

who completes something 'different' is asked to send John S. the details to be compiled for a Communicator article. Andrew E. has been inspired to finish his CW qualification and Blake wants to make his first HF contact.

- Kwantlen Secondary School is offering a semester dedicated to RF technology. This will provide an opportunity for 30 students to get their Amateur Radio Certificate. Adam Drake was able to convince the school board the importance of RF-related devices in many careers. This resulted in the creation of a full 17-week semester of five 80-minute classes per week.
- The ARRL School Roundup will take place February 9-13, giving students a chance to contact other students in North America. On these dates, John S. will work with the students to set up a POTA station on school grounds.
- Gord offered to find presenters for the Kwantlen school semester. Some suggestions include Rick Richardson VE7WF, demonstrating Satellite contacts, Peter Vogel VE7AFV on SDRs. John S. would like to have the students build a 3 transistor, short wave receiver and low power transmitter.
- Steve asked Mike P. for an update on Meshcore project. Mike shared the explosive popularity of Meshcore repeaters; now exceeding 400 between Squamish and Seattle. The public channel routinely receives hundreds of messages per day. The reliability of message transfers is becoming more reliable but is not yet perfect. A new channel was set up for SARC members.

Adjournment:

- Steve made a motion to adjourn the January meeting at 20:47. Seconded by Andrew E. Carried.

~ Minutes taken by Mike Porisky VE7YEG

Building a Low-Cost Satellite Tracker

<https://hackaday.com/2025/11/26/building-a-low-cost-satellite-tracker/>

February
2026



SARC General Meeting minutes

February 11, 2026

Recording Secretary MIKE PORISKY VE7YEG

Attendance: 33 members/guests attended online

Start Time: 19:00 hrs. January 24, 2026

Location: Online via Zoom

Welcome & Presentation of Agenda - Steve called the meeting to order and gave a brief welcome message.

Guest Presentation

The meeting featured a detailed presentation by Greg Miran KJ6ER on his innovative portable antenna designs, focusing on the PERformer and Marauder antennas.

Greg explained the technical principles behind his antennas, emphasizing elevated radials for improved efficiency and ease of deployment. He demonstrated how his designs achieve high performance with minimal components, making them suitable for portable operations and HOA restrictions.

The presentation included computer models, radiation patterns, and real-world testing results.

Greg also introduced his upcoming Marauder antenna, a Moxon-inspired design that offers significant gain and versatility across multiple bands.

The presentation concluded with a Q&A session where attendees asked questions about antenna efficiency, ground plane effects, and NVIS operation. More information about Greg's antennas could be found on his website at www.kj6er.net.

Welcome & Call to Order

The monthly meeting for February was called to order on February 11, 2026 at 20:14 by President Steve McLean VE7SXM.

Steve presented the agenda on screen for review and brought up several announcements.

Announcements

- It was announced with sadness the passing of past SARC President, Walter Delle Bond (VE7WDB), who became a silent key on February 7, 2026. Anton VE7SSD gave a



tribute to Walter, highlighting his involvement with SARC and reviewing his contributions over the years. He will be missed by many.

- The March general meeting will be by Zoom, with Rudi Wiedemann K7RAW and the April meeting will take place at the Fire Training Centre with Steve Stroh N8GNJ. Steve will present on 'proficiency in Amateur Radio', specifically packet radio.
- The OTC will not be available for socializing on Saturday, March 28 as it will be in use by SF SAR.
- A reminder that we meet for breakfast at Denny's Restaurant (68th and King George Boulevard) on Saturday mornings 7:00am - 9:00am.

OTC to follow - 5756-142nd Street - Open 9:30am to 12pm Saturdays.

Committee Reports:

Financial Statements:

- P&L report just has 2 small changes since last month.
- Income amount of \$630 will be moved to the correct account 4045.
- Balance sheet now shows the previous year's GIC that has been redeemed. The Executive decided to re-invest \$XXXX into another 1-year GIC at 2.8% interest rate generating approximately \$YYY when it matures in February, 2027.

Nets - Reg N.

- No problems with any of the nets at this time and participation in all SARC nets is growing.
- SEPAR net is working well after the protocol change.
- Graphics are added to the website by Reg on a weekly basis. Most recent pictures involve Dino's microwave project. Reg reminded everyone that they too can forward photos to webmaster@ve7sar.net to have them put on the website.

SEPAR/OTC

- Nothing new to report about the OTC contract or Internet access at Firehall #1. Gord is still waiting to hear back. Gord thanked Reg N. for his work on the SEPAR

nets and for the website changes. Also, thanks to Horace B. for making the Winlink repairs this past week. The Hi-Q antenna will be returning to Firehall #1 and connected to the Kenwood radio - hopefully by the end of February.

Membership - John B.

- John reported that we have 4 new members this past month - bringing the total to 154. He attempted to introduce each new member but they were not present on Zoom.

Contests - Mike P.

- Mike started off by thanking all of those that participated in the BC QSO party. There was a full slate of 12 operators (6 CW and 6 SSB) making a total of 1070 contacts in just 20 hours.
- The winners of the CQ WW DX contest were announced and for the 3rd year in a row, VE7SAR achieved first place in BC, Canada.
- The next contest will be RTTY starting this Friday, followed by the ARRL WW DX CW contest on Feb 20th. Anyone interested in joining the team, contact Mike at contesting@ve7sar.net

Repeaters - Steve

- The 220 repeater has been repaired and re-installed at the Concord building. Horace B. also fixed the problem with Winlink. More information about the repairs will come later.

Basic Class - John S.

- The latest course is well underway.
- The antenna workshop is planned for February 21 and with the number of students on this course a second week may be required.
- The high school RF course is into week 2. The ARRL Roundup will start in 2 weeks. This will give students an opportunity to communicate with other Hams and students across North America. Unfortunately, with the early start time propagation may not be ideal during this event.
- Reg asked about the size of the class and was informed that there were 30 enthusiastic students.



Old Business

- The Flex radio was brought back to the OTC last month. Steve would like to see more members use it.
- Big-foot antenna is still at the repair shop waiting for a replacement part. The invoice for the repairs has been paid and the cost is already reflected in the financial report. No additional amounts will be charged for the work that still needs to be done.
- Again, the 220 repeater is back in service. Reminder that the 220 net takes place on the last Thursday of each month.
- The backup battery at the concord repeater site is nearing the end of its life and will need replacement. Since the purchase price is within the allowable budget for Executive spending, Steve will look into purchasing a replacement. Also, the laptop computers are very old and will also need to be upgraded soon. Once a purchase price is known, it will be brought back to the membership for discussion and vote.
- Scott mentioned that the insurance for the SEPAR trailer was paid.
- Sheldon brought up the point that we have been holding a lot of monthly meetings by Zoom and he would like to see them return to in-person meeting. Steve pointed out that this is normal over the winter when we usually get bad weather. Also, with the December meeting being a Xmas social, only 4 meetings this year will be through Zoom; which includes March because the presenter is in Bellingham and Gord has not yet heard back about using the Fire Training Center.
- Sheldon also asked if Field Day could take place outside of the OTC this year. Andrew said that he will not be available as FD Coordinator due to a pre-arranged family outing.
- Reg would like to see Andrew E. or Doug J. organize a Saturday presentation on designing Ham-related objects for 3D printing. Andrew asked what level the course should be adapted for? Reg suggested building a specific item from start to finish and then printing it. Suggested using Fusion.

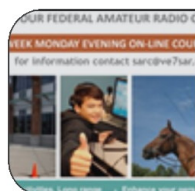
New Business

- Dino presented another idea for building a large-screen dual clock, synced by wireless connection to the user's home network. The project would be similar to the last clock but there is no GPS and the case will be 3D-printed. A level of interest was taken, with about 5 people indicating they would participate.

Adjournment

Steve made a motion to adjourn the February board meeting at 20:56. Seconded by Andrew E. Carried.

~ Minutes taken by Mike Porisky VE7YEG



DRIVE.GOOGLE.COM

Welcome to our courses.pdf



John Meneghello

I just finished John Schouten's course and was extremely impressed with attention to detail and the patience John showed throughout. Having the course material made available well in advance was a huge plus. If you want the best, go to the best - John Schouten & Surrey Amateur Club

Recent Photos



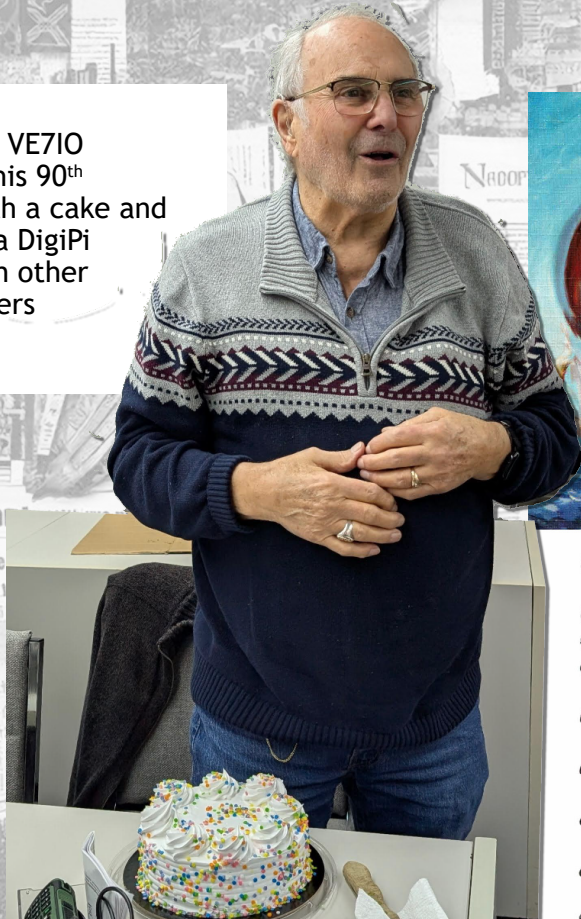
Top, John VE7TI set up with a group of the students during the ARRL School Roundup. Above, Dmitry VA7DVO explains his POTA setup. Top right, School teacher Adam VA7ZAL adjusts Dmitry's HF POTA antenna. Lower right, Mike VE7YEG demonstrates Meshcore to the class.



Scenes from the RF Communications semester course at Kwantlen Secondary School in Surrey - SARC members providing demonstrations of the various aspects of Amateur Radio

SARC News clips

Fred Orsetti VE7IO celebrated his 90th birthday with a cake and by building a DigiPi with a dozen other SARC members at the OTC.



To: SARC & SEPAR MEMBERS:

On January 17, while attending a workshop, I found myself being recognized for my birthday complete with a VERY tasty birthday cake and a melodious rendition of HAPPY BIRTHDAY.

My only claim to fame happened to be it was my ---- th birthday.

Later I find my mug occupied the SARC/SEPAR website which was so very thoughtful and delightful.

The warmth and camaraderie shown me over the past year and a bit by all members has been very special and I am so appreciative.

Thanks to the Executive, the team leaders and all who contribute in making this a premier organization.

Warm regards, Thanks and 73

Fred VE7IO

*Sincerely
Fred VE7IO*



Technical Skill in
Action



50 years of expertise bridging hobbyist passion with community service and essential public safety response

Dino VE7NX has a new SARC project in the works. It is an NTP clock suitable for the station or as an accurate time source for outdoor activations. Dino will be off to Bulgaria again for the summer to work on microwave projects with his fellow amateurs there.



Spotless!

Feb 22

Feb 23

Feb 24

The Sun has gone [spotless](#) for the first time in over three and a half years. On February 22, 2026, the solar disk facing Earth showed no visible sunspots, marking a rare moment of calm that drew attention from scientists, skywatchers and amateur radio operators. This event ended a remarkable streak of approximately 1,355 consecutive days with at least one sunspot visible, the last such spotless day occurring on June 8, 2022.

Sunspots are temporary, cooler regions on the Sun's surface caused by intense magnetic activity that inhibits convection, making them appear darker against the brighter photosphere. They serve as key indicators of solar activity. High sunspot numbers correlate with increased solar flares—powerful bursts of radiation—and coronal mass ejections (CMEs), massive plasma clouds hurled into space. When these events are Earth-directed, they can trigger geomagnetic storms, potentially disrupting satellite operations, GPS signals, radio communications, and even power grids.

The Sun follows an approximately 11-year cycle of magnetic activity, alternating between solar maximum (peak sunspot numbers) and generally good RF propagation to solar minimum (few or no sunspots). Solar Cycle 25 began in December 2019 and reached its maximum around October 2024, with a smoothed sunspot number peaking above initial predictions (around 161), proving stronger than many forecasts anticipated. Now, in early 2026, the cycle appears firmly in its declining phase, with sunspot numbers, and propagation, trending downward toward the next minimum expected around 2030.

The February 22 spotless day was not isolated; the Earth-facing side remained free of sunspots through February 24, spanning three consecutive days. However, by February 26, new active regions had rotated into view, ending the brief lull. This quick resurgence highlights that the cycle still has variability left, with occasional flares and sunspots possible even as overall activity wanes.

Spotless periods are more common near solar minimum. During the previous minimum between Cycles 24 and 25 (roughly 2018-2020), over 700 spotless days accumulated, sometimes with entire months devoid of spots. In contrast, the prolonged absence of such days from mid-2022 onward reflected the ramp-up and peak of Cycle 25's heightened activity. Experts emphasize caution in interpreting a single spotless event. As one report noted, "Spotless days are a key indicator [of] the solar cycle. During years around Solar Minimum, whole months can go by without a single sunspot, racking up dozens of spotless days in a row." Even at minimum, sporadic activity can occur, and the Sun's behavior remains unpredictable.

This momentary quiet offers a glimpse into the coming years of reduced solar influence on space weather. While fewer major disruptions may benefit technology-dependent societies, the transition phase can still produce surprises. Ongoing monitoring by observatories like NASA's Solar Dynamics Observatory and sites such as Spaceweather.com will track developments as Cycle 25 continues its descent.

~



Thank you recent visitors... 166 countries and counting—more than in my log!

	33,628		248		72		20		8		3		2		1
	21,857		217		72		17		7		3		2		1
	13,529		208		70		15		6		3		2		1
	3,738		190		70		14		6		3		2		1
	2,341		189		64		13		6		3		2		1
	2,005		188		48		13		6		3		2		1
	931		188		48		12		5		3		2		1
	903		181		46		12		5		3		2		1
	739		180		45		12		5		3		2		1
	733		176		43		11		5		3		2		1
	705		176		39		11		4		3		1		1
	587		174		34		11		4		2		1		1
	544		141		33		11		4		2		1		1
	452		115		31		11		4		2		1		1
	439		114		30		10		4		2		1		1
	375		106		30		10		4		2		1		1
	370		100		28		10		4		2		1		1
	351		93		28		9		4		2		1		1
	327		88		27		9		4		2		1		1
	307		82		20		9		4		2		1		1
	306		81		20		8		4		2		1		1

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The SEPAR Report

About our nets

by GORD KIRK VA7GK



Gord Kirk VA7GK
is a SARC Director
and the City of Surrey
SEPAR Coordinator

A short update for this period. Our regular nets have been occurring and participation by the local community remains good. The SEPAR Net Check-in Protocol has been well received. (See the Protocol under the SEPAR Tab at www.ve7sar.net). This helps keep the emergency practice nets moving. The protocol also trains the participants on what would be helpful during an actual event when a net is needed. Some other local nets have started using this type of check-in to aid their program as well.

I am always amazed at our local region's ham radio operators. During a conversation at a monthly event one of the SEPAR members suggested to another to start a regular check-in on the 220Mhz repeater and the other just ran with it. We now have regular testing (almost daily) on the Surrey 220Mhz repeater. This repeater also recently had an issue and was taken off the air, and another local amateur did a complete reset and alignment within a few days, allowing the repeater to be offline for a very short time. We have many active community neighbors with good emergency programs for amateur radio. We have good connections and share what we are doing with each other.

I was reflecting about a very popular net (Rainbow Country Net) that happens on a repeater with a very large footprint daily from about 08:00 to almost noon some days. It happens 7 days a week with local and IRLP check-ins from around the world. This net has a tremendous group that participates with likely 140 plus check-ins daily. The net controllers do an excellent job making it fun and informative. It again is great practice for the community and what it might look like if we lose normal communications. Amateur radio is a hobby that has so many facets you certainly can always be learning. It is also a hobby that can provide a service to the larger community if needed.



One area we have had some struggles in maintaining a consistent Winlink net. We have tried a weekly email sent out on the system and allowing recipients a few days to respond. From personal experience doing this helps me keep the Winlink application current, updating many areas including the forms and repeaters. Setting up can be a challenge for some, cost for a TNC or similar device and cables to interface between the computer and radio may be an issue. With that said for those who have spent the time and money and have set up their equipment it can still be hard to maintain participation. We will continue to explore how to maintain active use of this very valuable tool.

As we approach dryer and warmer weather, we will also again take the time over the next few months to take a look at our SEPAR communications trailer for improvements, service and repairs.

There is always a long list of things for a volunteer emergency communications group to do. As a volunteer coordinator for SEPAR and am always so grateful for those conversations about how to improve and to those actually doing the volunteer work. Each year we learn, improve and meet new volunteers. If you are considering volunteering and are a licensed amateur radio operator participating in your local community's emergency program can be fun and rewarding.

As always if you have any questions or want further information on the SEPAR program please reach out.

~ Gord Kirk, VA7GK
Volunteer SEPAR Coordinator

coordinator@separ.ca

Recall Gord Kirk's 13-Oct-2025 "New SEPAR Primary Frequency List" special bulletin, in which he explains the desirability of programming SEPAR channels 1-9 into a contiguous block of 9 memories in your radio.

Well, good luck doing that on the IC-9700, the problem being that the IC-9700's memories are segregated by band (i.e. 99 VHF memories, 99 UHF memories and 99 1200MHz memories).

The SEPAR Primary Frequency List includes both VHF and UHF frequencies (plus a couple of 220MHz band frequencies unavailable on the IC-9700). Consequently, you can't store a single contiguous block of the 9 SEPAR channels in the IC-9700.

It's not a big deal because I'm pretty adept at manually tuning the IC-9700, programming in repeaters etc.; but Jeepers I was able to do it on my two HTs but not on the IC-9700. 😞

Please let me know if you think I'm overlooking something.

~ Blake VA7BWG





Radio is the same as in 1920...

Really?

by JOHN SCHOUTEN VE7TI

There is a controversial article at <https://www.radioworld.com/news-and-business/business-and-law/financial-traders-seek-permanency-for-shortwave-data> with the quote: ““A radio engineer from the 1920s could take a shortwave radio from the 1920s and transmit and receive voice signals today,” the SMC wrote in a cost-benefit analysis filed to the FCC after a December meeting with the commission.

“It is remarkable how little innovation has occurred in this band.”

This claim by the Shortwave Modernization Coalition (SMC), a proponent of gaining HF bandwidth to trade financial transactions, because it is faster than the Internet, published their proposal with the quote: “A radio engineer from the 1920s could take a shortwave radio from the 1920s and transmit and receive voice signals today” and that it is “remarkable how little innovation has occurred in this band” overlooks a century of profound advancements in amateur radio on the high-frequency (HF) shortwave bands (roughly 3-30 MHz). While basic voice transmission principles remain rooted in amplitude modulation (AM), the amateur radio community has driven remarkable efficiency improvements, mode innovations, and

technological leaps that have transformed communication capabilities, spectrum usage, and performance.

The SMC claims their modern SDR systems can find open channels without interference. This gives me a perfect entry point - the SMC is ironically using modern technology (SDRs) to argue the band hasn't changed, while I would counter that modern transmitters themselves are a major innovation in spectral purity.

There is a very poor analogy that only serves to advance their commercial purposes and may escape the regulators' scrutiny because judges/assessors are generally non-technical. A good argument to try in a court or some committee because the audience is ignorant about technology. One could say the same thing about an automobile. We could all drive a Model T, except maybe for newbies to driving, who do not have experience with “standard” transmissions. What the argument does not address is efficiency.



In the 1920s transmitters and receivers were separate units weighing up to 100 lbs each, power requirements were measured in hundreds of volts, and power consumption of the gear was measured in kilowatts. Now, and because the incredible innovation we have seen over the last century, the same communications can be successful with 1/1000th of the power, equipment that weighs ounces, and power consumption of under one watt. Using this invalid type of argument, they could claim that because a prism from the 1700s will split light into a coloured spectrum just like a prism of today can, that here has clearly been no progress in physics.

Let's look back and clarify how radio, and especially Amateur Radio, has progressed. Amateur radio began in the early 20th century with spark-gap transmitters and crystal detectors, evolving rapidly in the 1920s as vacuum tubes replaced spark technology, enabling more stable signals and longer distances. Crystal control for frequency stability emerged around 1926, and amateurs pioneered transatlantic contacts on shortwave, leading to the allocation of modern HF bands (160m through 10m) by the late 1920s. These early achievements laid the foundation, but innovation accelerated dramatically afterward.

One of the most significant efficiency breakthroughs was single-sideband (SSB) modulation. SSB suppresses the carrier and one sideband of traditional AM, concentrating transmitter power into useful information. This halves bandwidth usage and dramatically improves power efficiency—often providing 8-10 times the effective range for the same power output compared to AM. Amateurs experimented with SSB in the 1930s (notably Robert Moore, W6DEI, in 1933), but serious adoption followed World War II. By the 1950s, hams pioneered practical SSB for HF voice, with commercial equipment like Collins transceivers popularizing it in the 1960s. Today, SSB is the dominant HF voice mode worldwide, enabling clearer long-distance contacts with lower power and less spectrum congestion.

Beyond voice, Morse code (CW) has seen refinements, but the real explosion came with digital modes, which exploit modern computing to



achieve extraordinary efficiency. Packet radio in the 1980s introduced error-corrected data using AX.25 protocol, paving the way for automated messaging.

In 1998, Peter Martinez (G3PLX) introduced PSK31 (Phase Shift Keying, 31 baud), a narrow-band (about 31-50 Hz) digital text mode for real-time keyboard-to-keyboard conversations. PSK31 operates at low power, resists noise and fading better than voice, and fits dozens of simultaneous QSOs (contacts) in the space of one SSB signal.

The 2000s brought weak-signal innovations via Joe Taylor (K1JT, Nobel Prize-winning physicist) and the WSJT suite. Modes like JT65 and WSPR enabled reliable communication at incredibly low signal-to-noise ratios. WSPR (Weak Signal Propagation Reporter) maps global propagation automatically with milliwatt power levels.

The pinnacle arrived in 2017 with FT8 (Frank-Taylor 8-FSK), a structured digital mode using 15-second cycles and 50 Hz bandwidth. FT8 decodes signals at -20 dB SNR or lower, making DX contacts possible under poor conditions with minimal power. Within two years, it became the most popular HF mode, revolutionizing contesting, award-chasing, and low-power operations. Variants like FT4 (faster) and JS8Call (conversational) followed.



These digital modes represent profound innovation:

- Spectrum efficiency – Modes like FT8 and PSK31 use fractions of SSB bandwidth, allowing far more activity in crowded HF bands.
- Power efficiency – Contacts at milliwatts or watts succeed where voice fails, enabling QRP (low-power) enthusiasts to span continents.
- Weak-signal performance – Advanced error correction and digital signal processing overcome noise, fading, and propagation challenges.
- Accessibility – Free software (WSJT-X, FLdigi) and sound-card interfaces turn everyday computers into sophisticated transceivers.

Amateur radio has also advanced through solid-state electronics (1960s-1970s), software-defined radio (SDR) since the 2000s (e.g., FlexRadio), and integration with internet-linked systems (EchoLink, DMR).

This revolution in efficiency is underpinned by equally dramatic, yet often invisible, improvements in spectral purity. A 1920s shortwave transmitter, typically a free-running oscillator, was inherently "noisy" by modern standards. Its signal would drift in frequency and generate significant energy on adjacent frequencies (harmonics and phase noise), acting like a broad, splattering paint can on the radio spectrum. Receivers of the era were similarly broad and prone to picking up multiple signals at once.

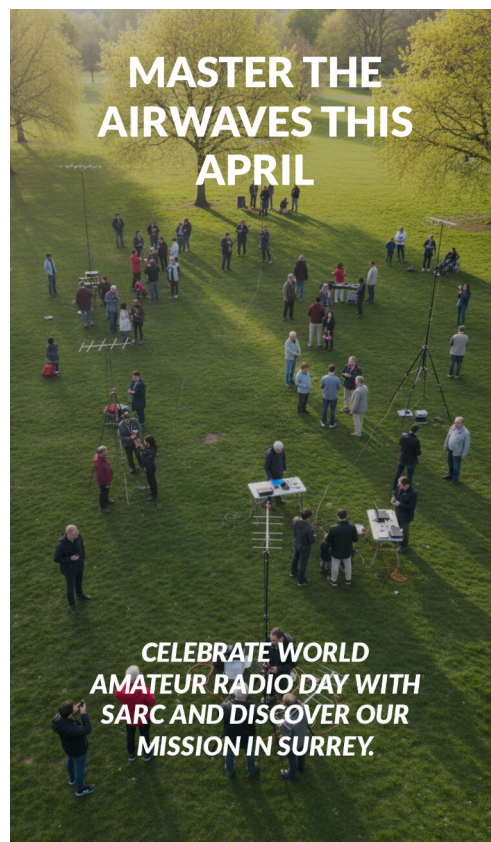
Today, through advancements in crystal control, frequency synthesis, and especially software-defined radio (SDR) architectures, modern amateur transceivers produce signals of remarkable purity. They stay precisely on their assigned frequency, and their energy is tightly confined to a very narrow bandwidth—often just a few tens of Hertz for a digital mode. This spectral discipline is what makes weak-signal work possible; a transmitter putting out "clean" power allows a distant receiver to dig that signal out of the noise without being swamped by the transmitter's own unintended splatter. It is also what allows dozens, perhaps even hundreds of contacts to occur simultaneously in the space once occupied by a single, drifting 1920s signal.

This unprecedented control, born from a century of innovation, is the very reason modern low-power transmissions can be so effective without causing the broad interference that would have been unavoidable with the equipment the SMC implies is functionally equivalent.

The SMC's statement ignores this obvious evolution. The shortwave bands are not stagnant; they are a testament to amateur ingenuity, where hams continually push boundaries to communicate farther, clearer, and more efficiently. From SSB's power savings to FT8's weak-signal mastery, innovation thrives—not despite the band's longevity, but because dedicated experimenters refuse to let it stand still.

73,

~John VE7TI



HAM LEFTOVERS...

Sliderule Emulator

Do you miss that mathematical marvel predating electronic calculators? A classic slide rule replica implemented in JavaScript. All scales are programmatically drawn from reverse-engineered mathematical equations. <https://www.amateurradio.com/sliderule-emulator-with-equation-solver/>

Does POTA's Selection of U.S. Park Entities Shortchange Urban Hams?

On a regular Saturday-morning Zoom meeting of hams a few months ago, a participant in Los Angeles asked the group, "Why can't I activate one of my local parks and have it count in POTA?" Some of those in attendance echoed the sentiment. <https://www.amateurradio.com/does-potas-selection-of-u-s-park-entities-shortchange-urban-hams/>

Quansheng Remote Dock on Linux - UV-K5 - Internet Remote Controlled Transceiver

This is a video demonstrating the Quansheng Remote Dock in practice on linux. The developer goes through a practical demonstration of operating a remote station over the internet using VNC, pulseaudio, and the AIOC with the transceiver, finally making a contact on an RF repeater halfway across the world. <https://egzumer.github.io/uvtools/>

'You're on standby for Lockerbie'

When Anne and Ross Campbell were watching the news on the night of 21 December 1988, they already had "go-bags" ready. The Ayrshire-based couple were part of the Radio Amateurs' Emergency Network (Raynet), a UK-wide radio communications service. Staffed by volunteers, it was formed in the aftermath of the North Sea flood in 1953 with a simple aim: during major events and emergencies, licensed Raynet operators would step in to provide essential radio communications. When news broke that an aircraft had crashed in a small Dumfries and Galloway town, Anne and Ross got the call from their local controller: "You're on standby for Lockerbie."

Pan Am 103 was flying from Heathrow to New York when a bomb exploded in the skies above the town, killing all 259 passengers and crew on board – as well as 11 people on the ground. It remains the biggest terror attack to have taken place on British soil. The BBC account of the event is at: <https://www.bbc.com/news/articles/c865yxe42qvo>

Do you have an occasional need for a basic oscilloscope?

There is an app for that. A compact [browse-based oscilloscope](#) on a webpage that displays the signal trace and provides the interface. Since the software uses direct memory access to continually read a signal from the ADC, it's easy to adjust the sampling rate up to the hardware's limit of 83,333 Hz. It is ESP32 based and simple to construct.

A look back...

at The Communicator—April 2016

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2025-2026

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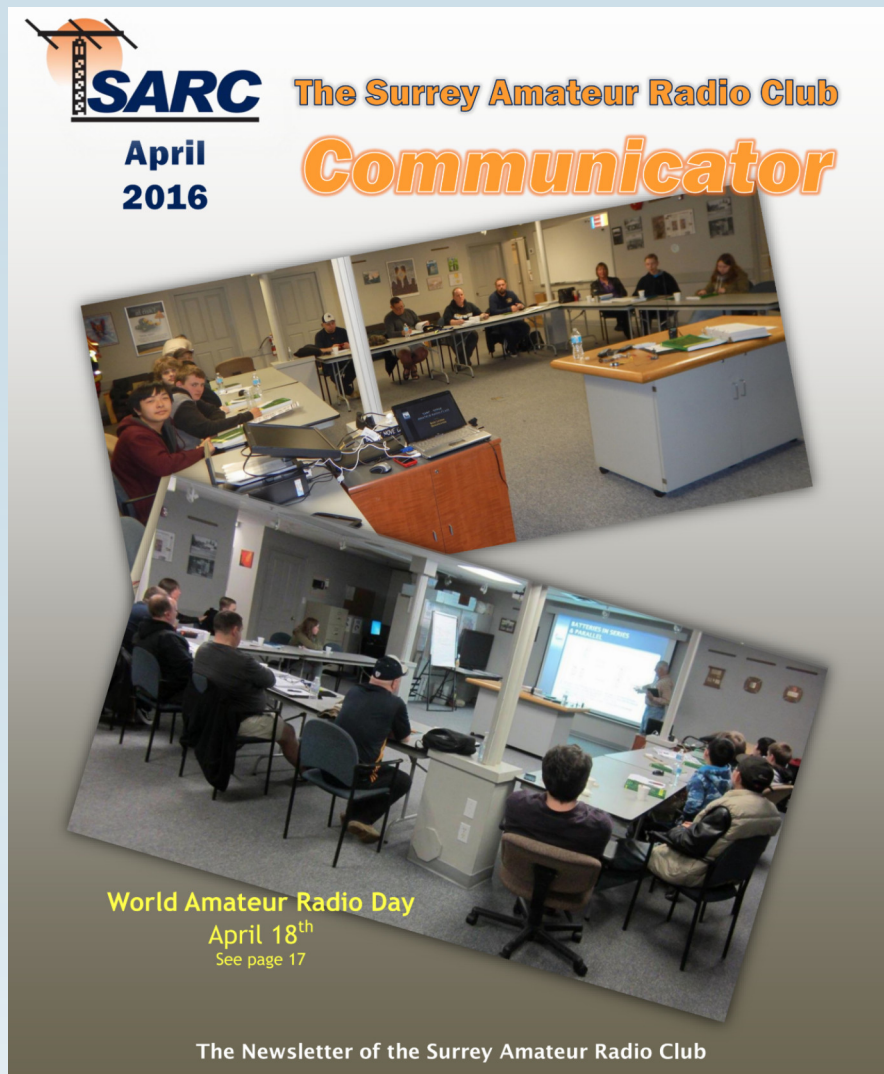
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[SARCindex](#)

March and April

Down The Log...

At the SARC General Meeting **March 11th**, Rudi Wiedemann K7RAW "The Antenna Whisperer" will present a program via Zoom titled: "A Drone-Mounted Field Strength Meter to Develop a 3-D Radiation Pattern from an Antenna"



Most hams judge the performance of their antenna systems by the strength of signal reports, which is merely anecdotal evidence at best. Hams that are familiar with antenna modeling programs such as EZNEC can generate plots of antenna radiation patterns. However, it is highly desirable to measure the actual antenna radiation in 3-D around your antenna to compare it to the model and experiment with potential improvements from DX'ing to NVIS.

And at the SARC General Meeting on **April 8th**, our first in-person meeting of 2026, at the Surrey Fire Training Centre 14923 64th Ave., Surrey, our featured presenter is SARC member, regular Communicator contributor and author of Zero Retries, Steve N8GNJ and Tina KD7WSF Stroh. Steve's and Tina's presentation will discuss technological innovations in Amateur Radio, such as the Linux Handheld Transceiver (LinHT) project, why the M17 open source digital voice system is significant (and not just another digital voice mode), why an Amateur Radio GEO payload for the Western Hemisphere would be significant, and the amazing progress of AREDN microwave networking.



Hope to see you there.

On the Web ve7sar.net

Between Communicators, watch your e-mail for news, announcements of Amateur Radio events, monthly meetings and training opportunities.

Click the links below to follow our presence on the web and social media:

SARC Blog
ve7sar.blogspot.ca

Bluesky (No more 'X')
[#ve7sar.bsky.social](https://ve7sar.bsky.social)

FaceBook
[SurreyAmateurRadio](https://www.facebook.com/SurreyAmateurRadio)

Our YouTube Channel
[SurreyARC](https://www.youtube.com/SurreyARC)

Weekly Tuesday Evening SARC and SEPAR Nets

Join the SEPAR net every Tuesday at 7:30 pm and the SARC net at 8 pm on either of the repeaters: North repeater on 147.360 MHz +600 KHz, tone 110.9 Hz and South repeater on 147.360 MHz + 600 KHz, tone 103.5 Hz. You can also join via IRLP (node 1736) and Echolink (node 496228) which are available only on the North repeater.

Monthly 220 MHz Net

The 220 Net has moved to the last Thursday of each month at 7:30 pm on our 220 repeater at 223.960 - 1.6 MHz, tone 110.9 Hz. This is not a "chat" net – just check in and exchange signal reports.

Monthly UHF Net

Darryl VA7CQD hosts a monthly UHF net held at 7:30 pm on the first Sunday of each month on SARC's UHF repeater 443.775 MHz+5 MHz tone 110.9 Hz. This is a non-chat net; just check in and carry on with your evening.

SARC Monthly Meetings

2nd Wed. (Sept-Jun)
1900 hrs at the [Surrey Fire Service Training Centre](https://www.surreyfire.ca),
14923 - 64 Avenue,
Surrey, BC.

Here is a what3words link and map: <https://what3words.com/markers.addiction.ozone>

Weekly SARC Social

Saturday between 0730 and 0930 hrs at the Denny's Restaurant, 6850 King George Blvd., Surrey BC

Workshops

Saturday between 1000 and Noon at the OTC
5756 142 Street, Surrey

SEPAR Net

Tuesday at 1930 hrs local

SARC Net

Tuesday at 2000 hrs local

VE7RSC Repeaters

2m North: 147.360MHz+
Tone=110.9Hz
IRLP node 1736
Echolink node 496228

2m South: 147.360MHz+
Tone=103.5Hz Fusion
capable; No IRLP/EchoLink

1.2m: 223.960 Mhz -1.6
Tone=110.9Hz

70cm: 443.775MHz+
Tone= 110.9Hz
IRLP node 1737
WiRES-X Room ID 00047

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Amateur Radio
Magazine
La Revue des
Radioamateurs
Canadiens

THE CANADIAN AMATEUR

MARCH / APRIL – MARS / AVRIL 2026



Derek Hay, VE4HAY, President Radio Amateurs of Manitoba and Dan Furlan, Past President Manitoba Historical Society



Stuart Crawford, VE9CF | RAC Challenge 2025 Champion



Shigeo Sato, JA8EKU | Worked All North America Gold

Publications Mail Agreement # 400286022 Registration # 098466

Radio Amateurs of Canada:
"We are All About Amateur Radio!"



RAC Amateurs of the Year: Fred (VE1FA) and Helen (VA1YL) Archibald and their daughter Margaret (VE2ZOO) on Walrus Island (NA-121)



Above: ARRL Board Meeting 2026 | Below: RAC Auxiliary Communications Service Exercise



The Canadian Amateur (TCA),

Canada's premiere national magazine devoted to Amateur Radio, is published six times per year and is the membership journal of the Radio Amateurs of Canada (RAC). It is available in both print and digital versions (eTCA). Members of RAC, Canada's sole national Amateur Radio organization, receive TCA automatically.

A subscription to TCA also provides membership in Radio Amateurs of Canada. RAC is also the publisher of TCA. For information on how to join Radio Amateurs of Canada and subscribe to TCA please visit our [Membership Sign Up page](#).

At 64-pages per issue and reaching approximately 4,500 readers, TCA offers news and views on the Canadian Amateur Radio scene from coast to coast. It includes regular columns, features and technical articles of interest to Amateur Radio operators. In addition, a Coming Events calendar, Feedback, QSL Bureau information and coverage of regulatory issues are also provided.

If you would like additional information about The Canadian Amateur magazine please contact the Editor Alan Griffin at tcamag@yahoo.ca.

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